

Figure 15. Zonal differences in sedimentary PCB concentrations for fall and spring collections (both on a dry weight and OC normalized basis).

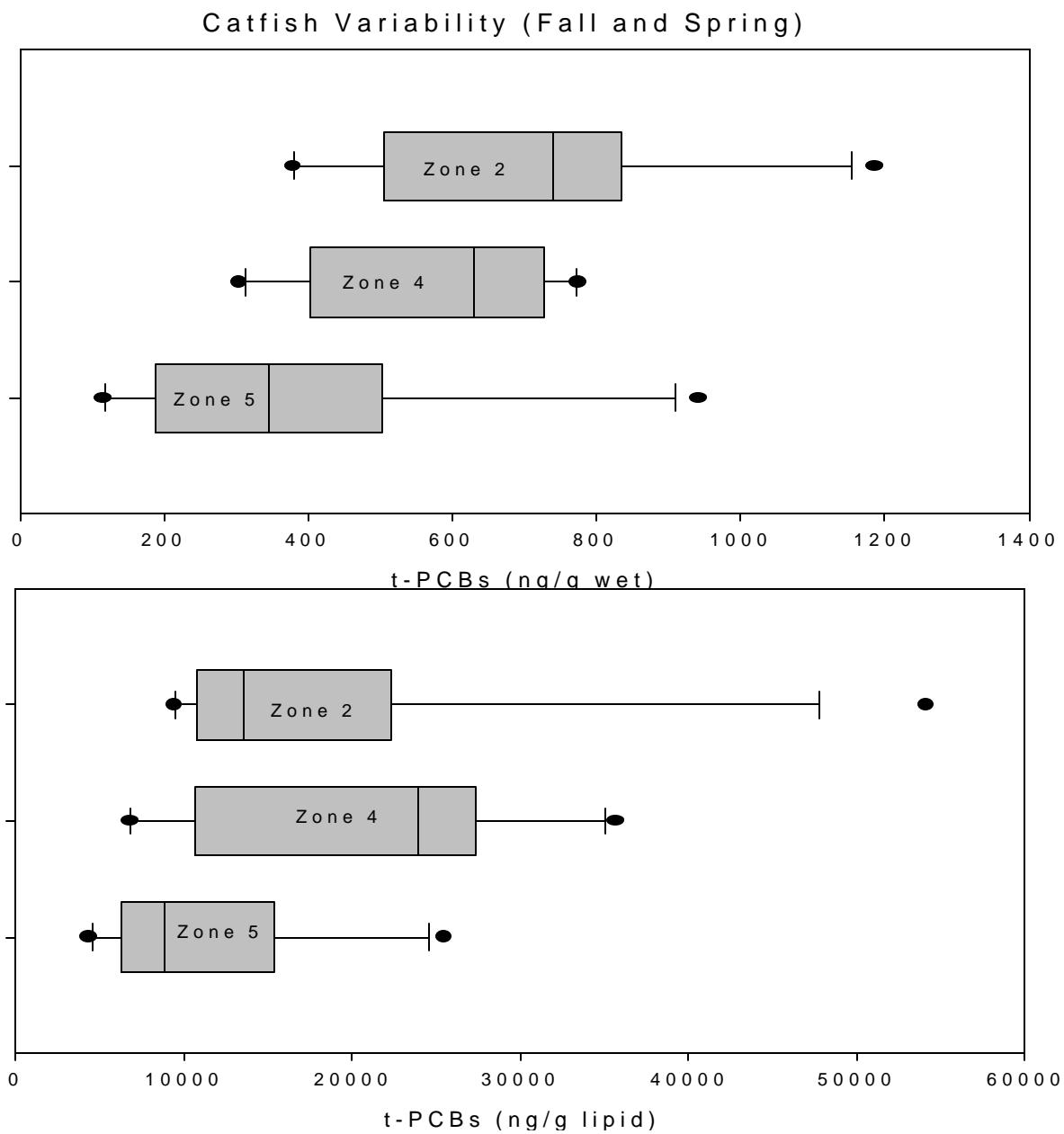


Figure 16. Variability in t-PCB channel catfish concentrations (lipid normalized) for fall collected (top) and spring (bottom) variability studies in Zones 2, 4, and 5.

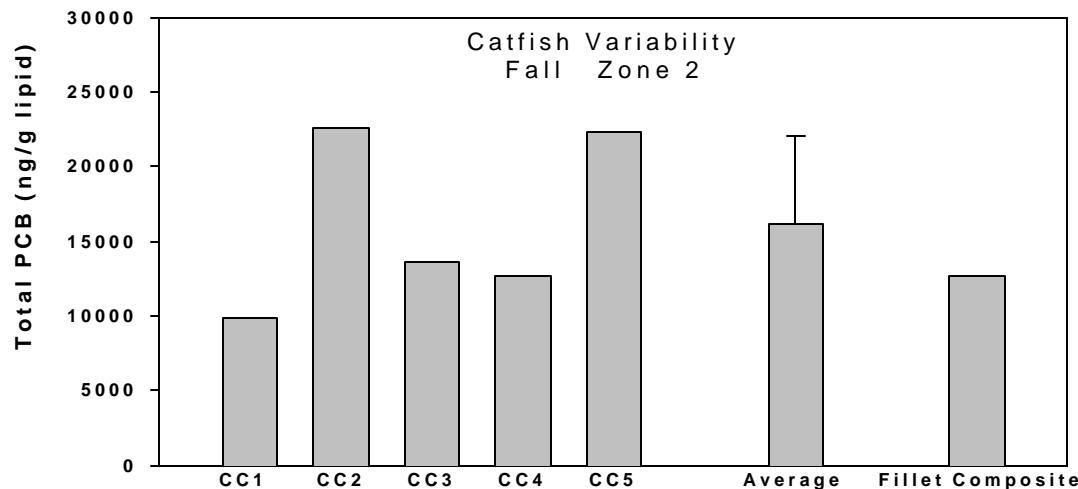
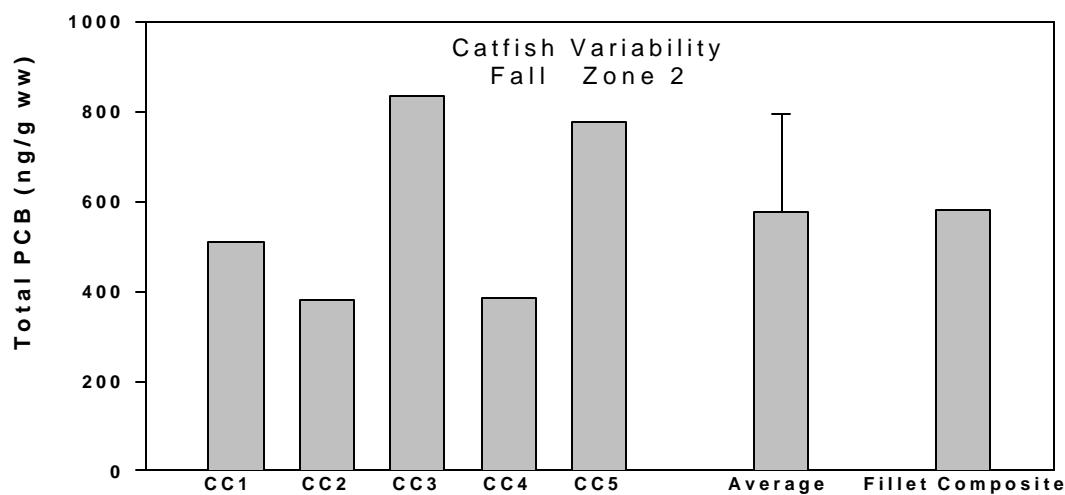


Figure 17. Individual fillet concentrations (wet weight and lipid normalized) for catfish from Zone 2 (fall) compared to the mathematical average (standard deviations shown by error bars) and the analyzed fillet composite.

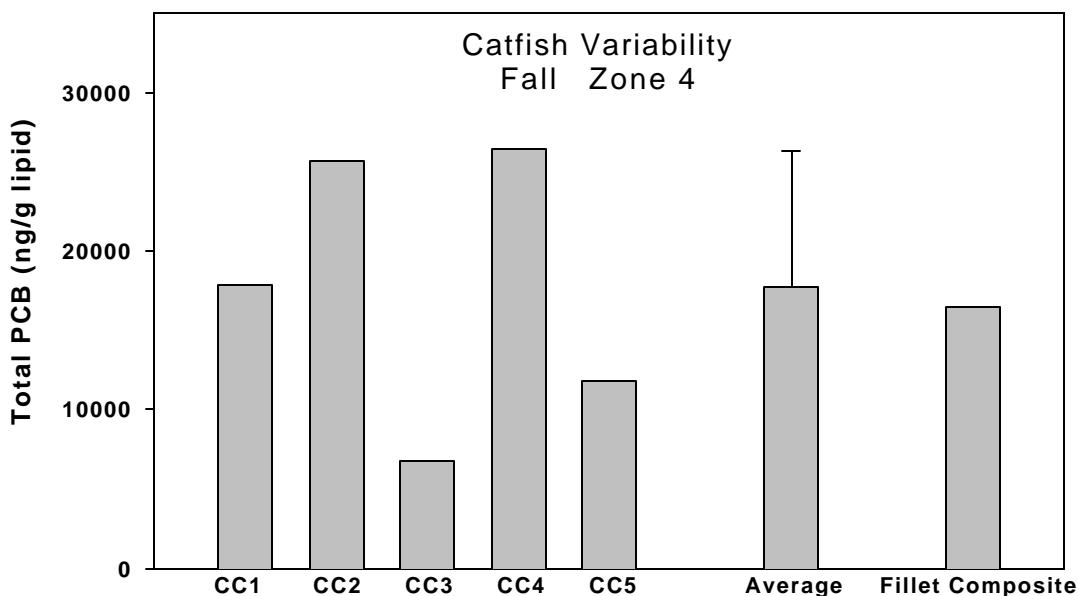
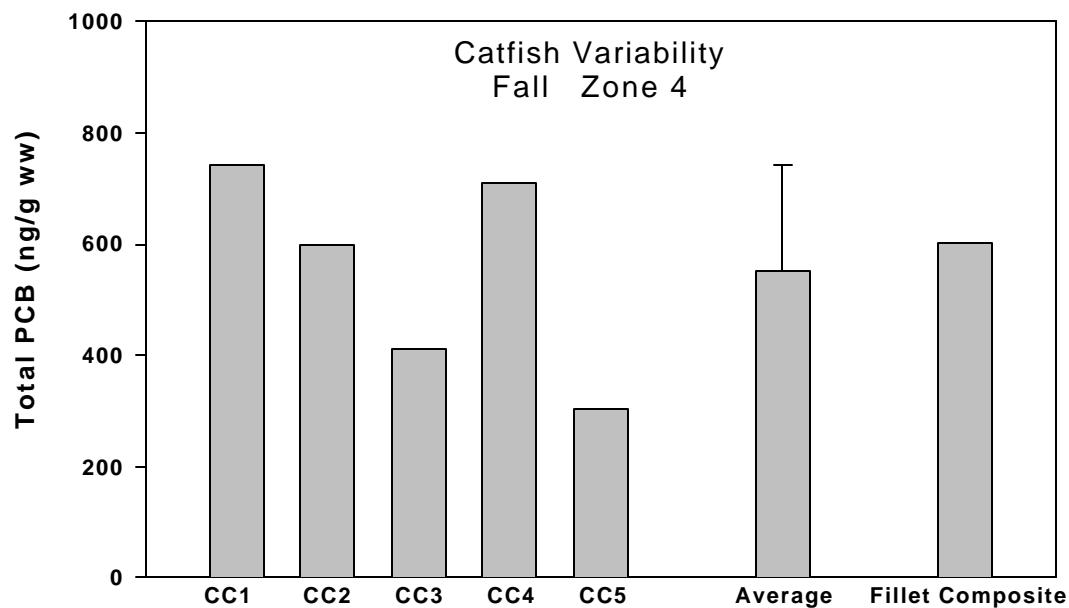


Figure 18. Individual fillet concentrations (wet weight and lipid normalized) for catfish from Zone 4 (fall) compared to the mathematical average (standard deviations shown by error bars) and the analyzed fillet composite.

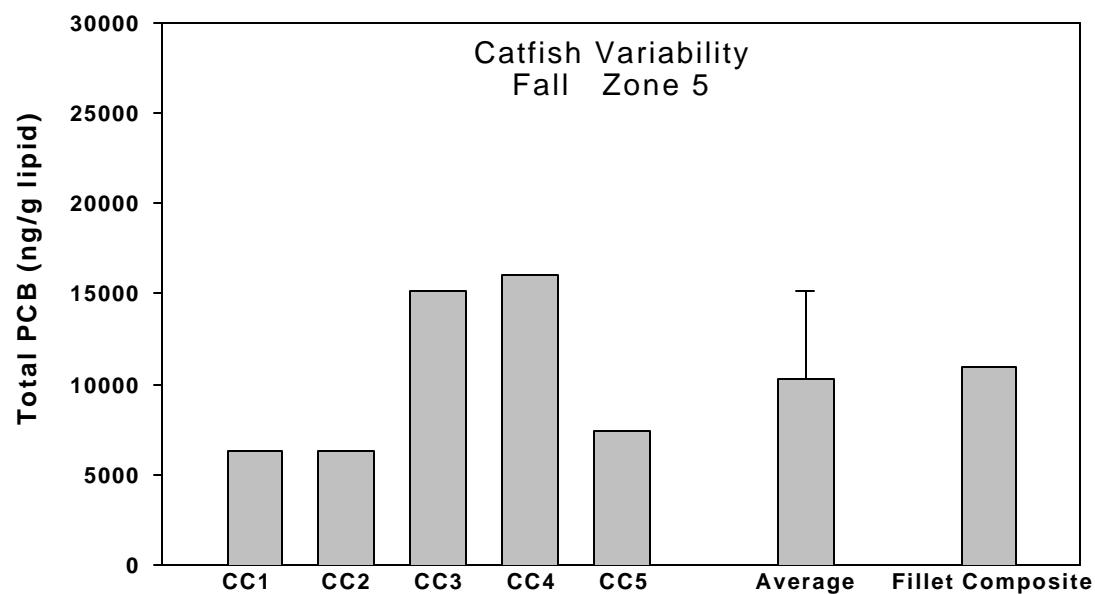
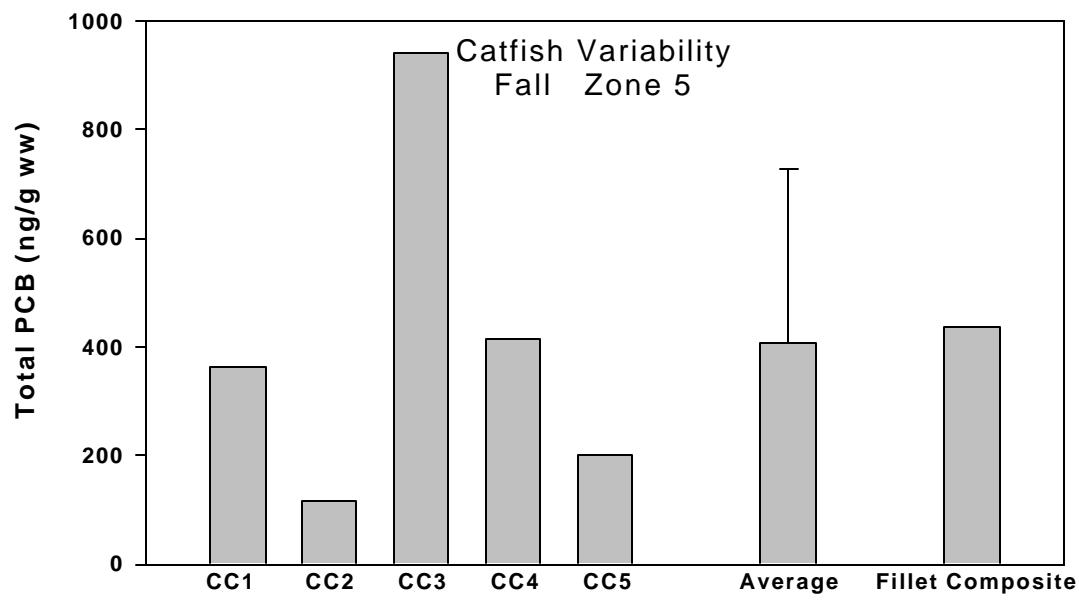


Figure 19. Individual fillet concentrations (wet weight and lipid normalized) for catfish from Zone 5 (fall) compared to the mathematical average (standard deviations shown by error bars) and the analyzed fillet composite.

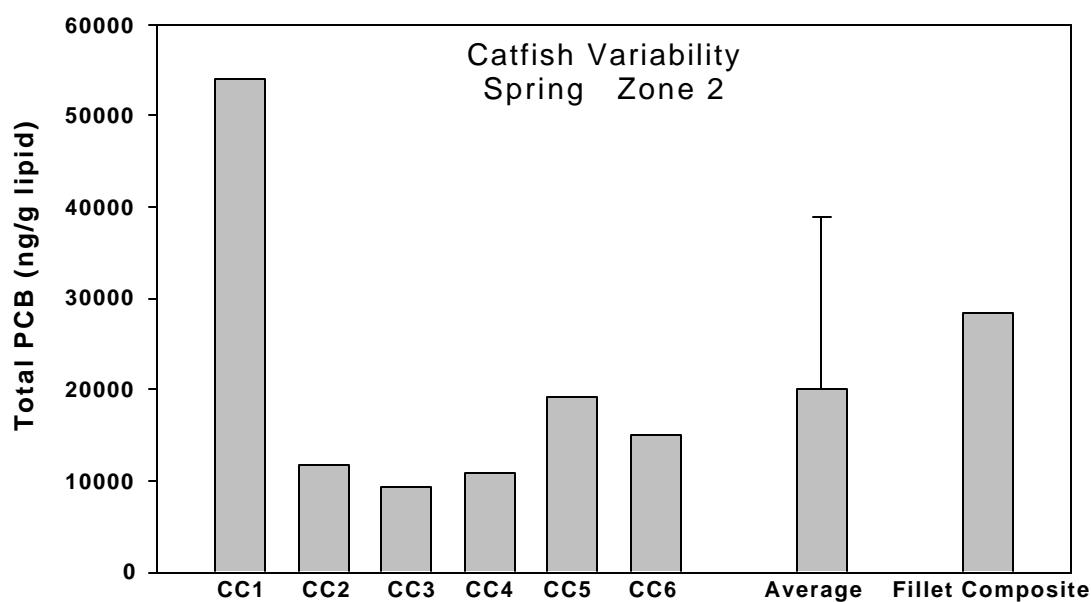
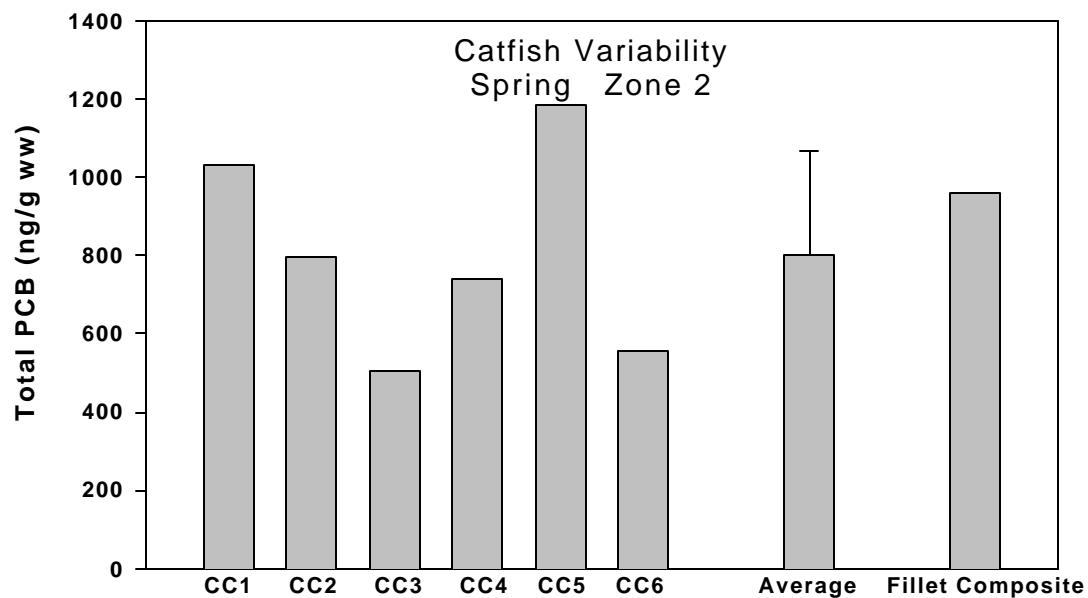


Figure 20. Individual fillet concentrations (wet weight and lipid normalized) for catfish from Zone 2 (spring) compared to the mathematical average (standard deviations shown by error bars) and the analyzed fillet composite.

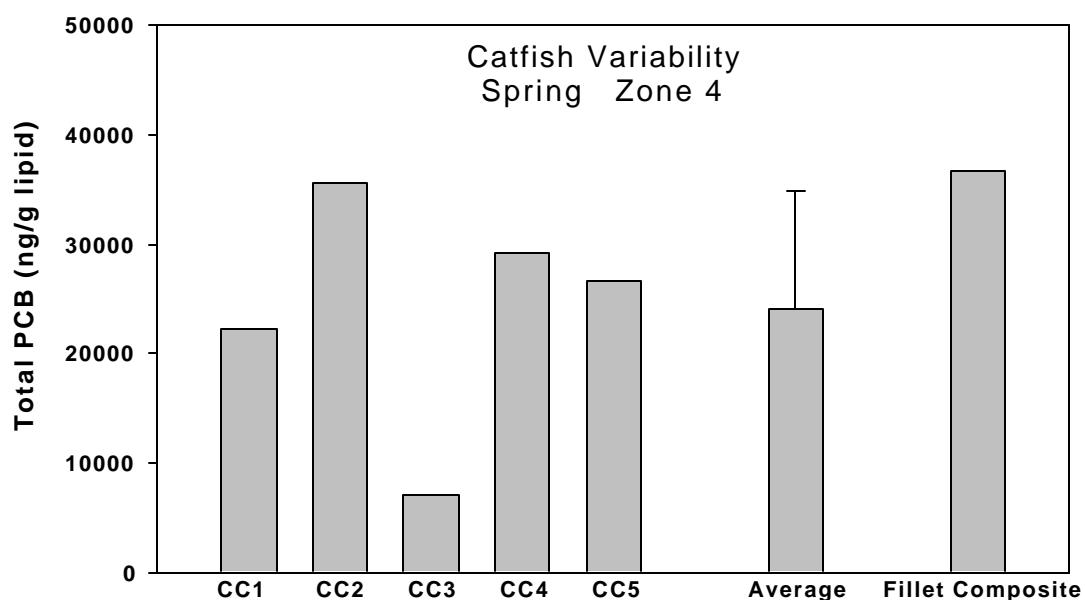
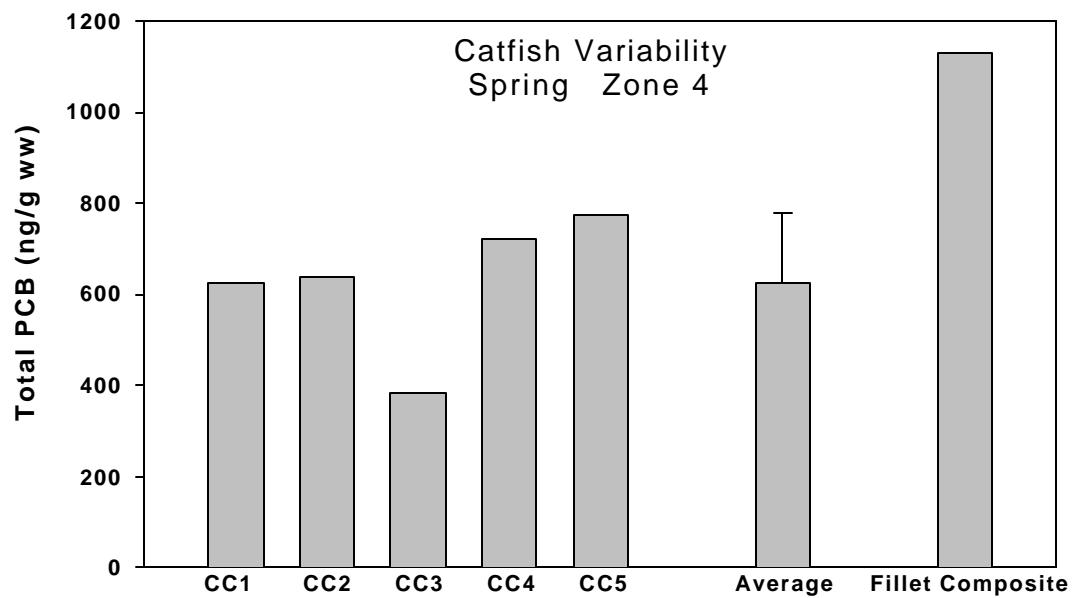


Figure 21. Individual fillet concentrations (wet weight and lipid normalized) for catfish from Zone 4 (spring) compared to the mathematical average (standard deviations shown by error bars) and the analyzed fillet composite.

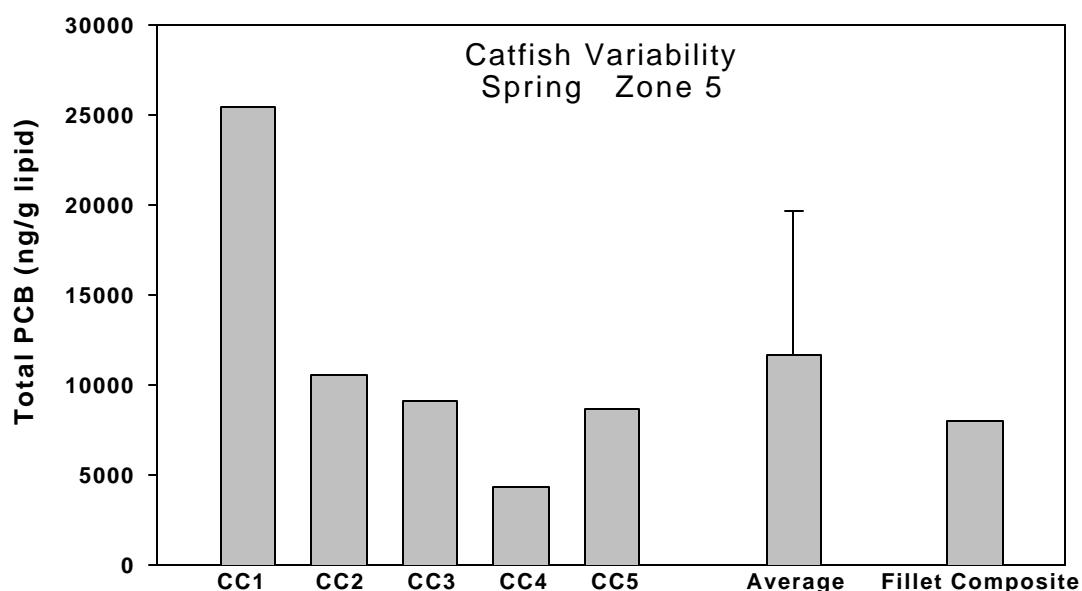
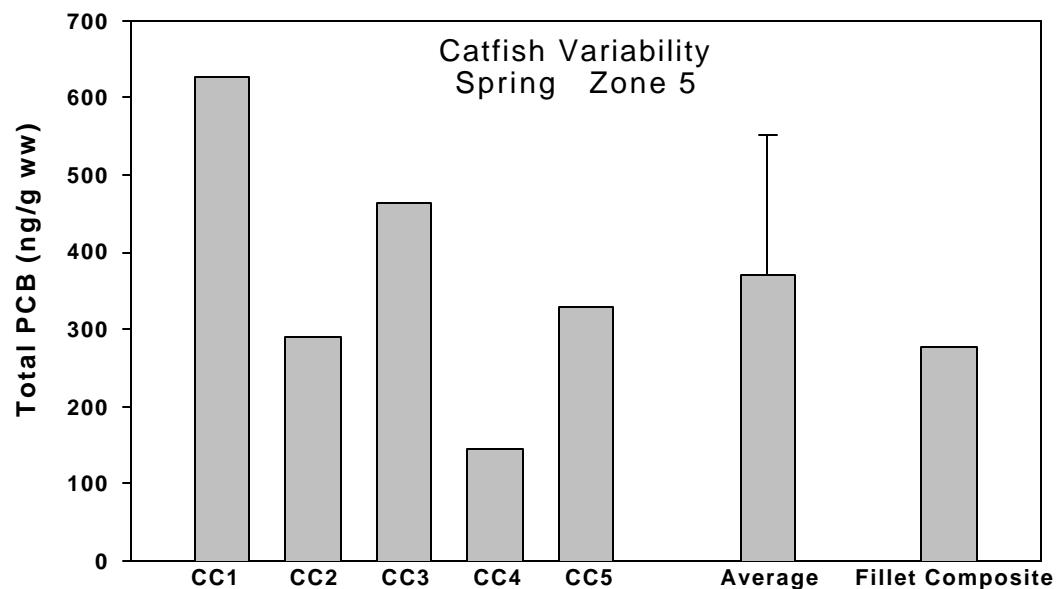


Figure 22. Individual fillet concentrations (wet weight and lipid normalized) for catfish from Zone 5 (spring) compared to the mathematical average (standard deviations shown by error bars) and the analyzed fillet composite.

White Perch Variability

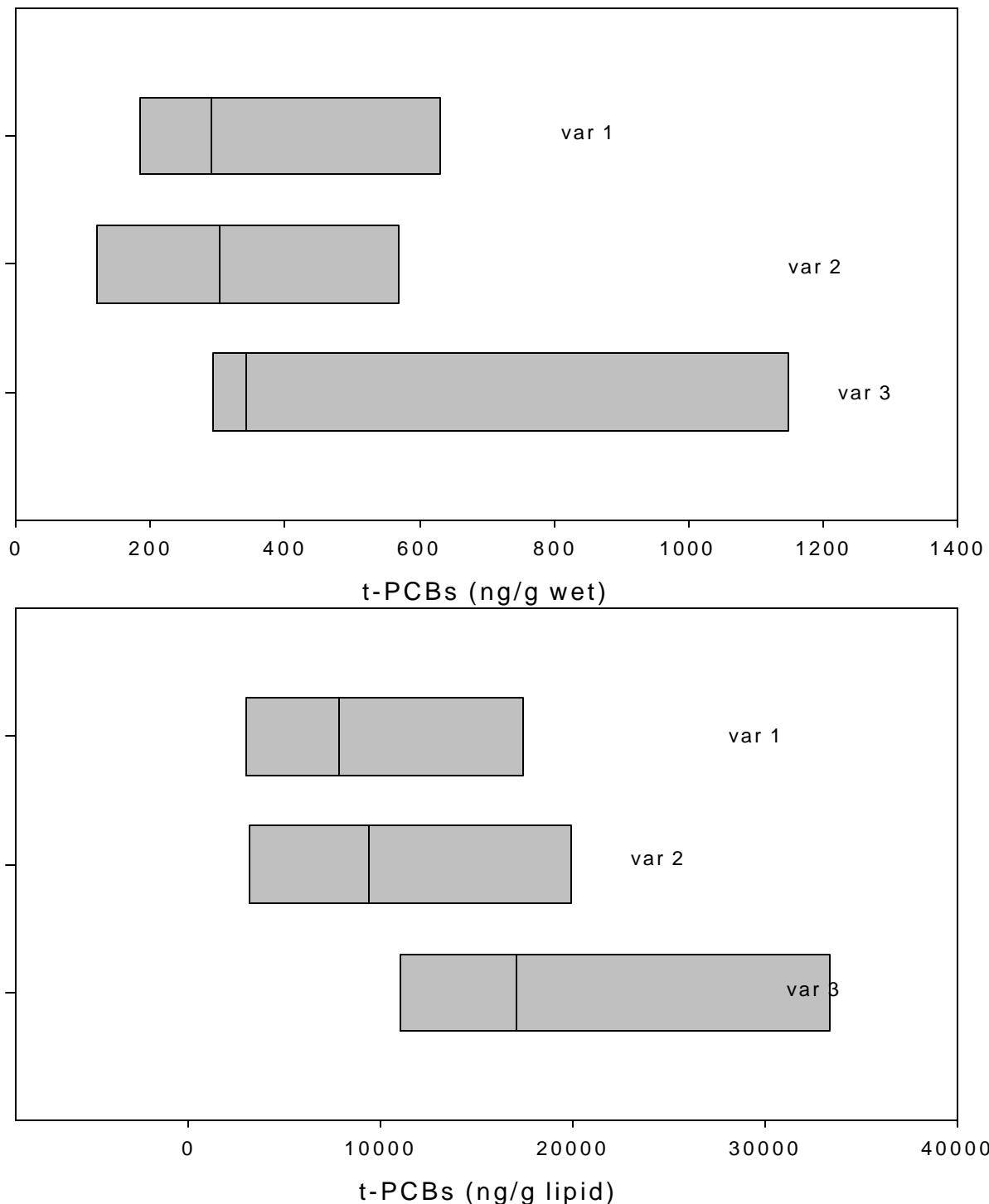


Figure 23. Variability in t-PCB white perch concentrations (lipid normalized) for fall collected variability study within three regions of Zone 5.

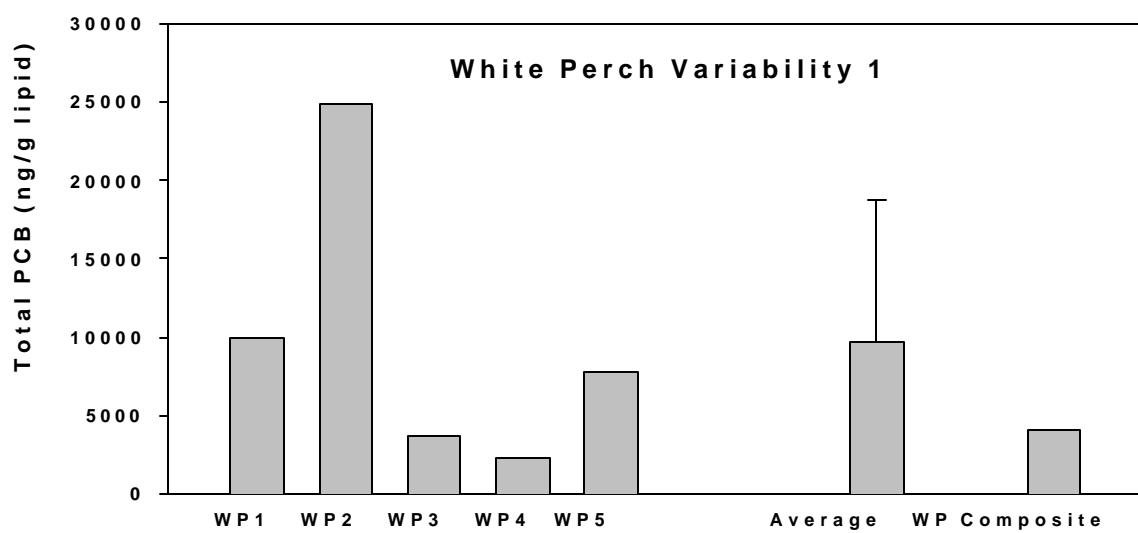
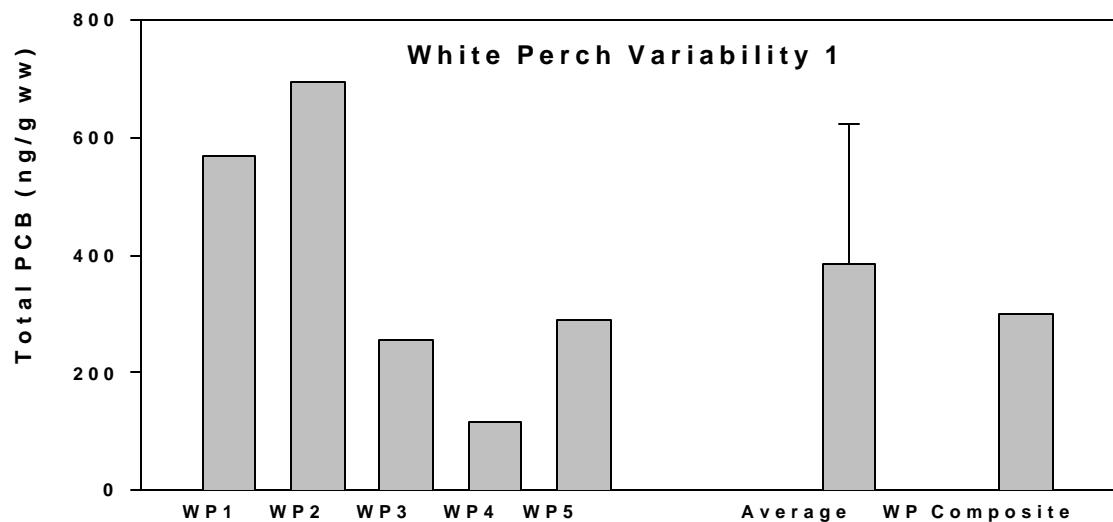


Figure 24. Individual fillet concentrations (wet weight and lipid normalized) for perch from region 1 in Zone 5 (fall) compared to the mathematical average (standard deviations shown by error bars) and the analyzed fillet composite.

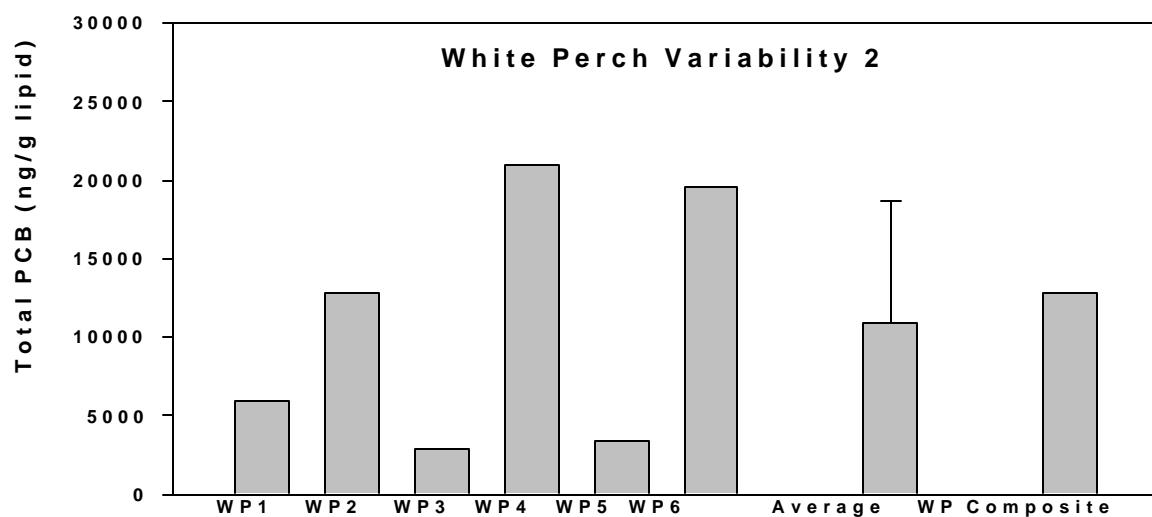
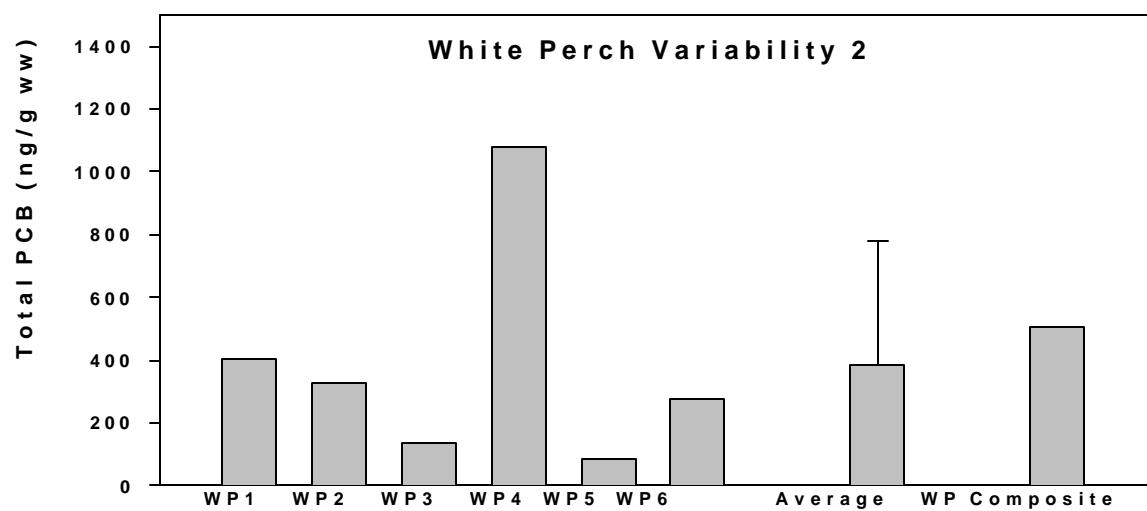


Figure 25. Individual fillet concentrations (wet weight and lipid normalized) for catfish from region 2 in Zone 5 (fall) compared to the mathematical average (standard deviations shown by error bars) and the analyzed fillet composite.

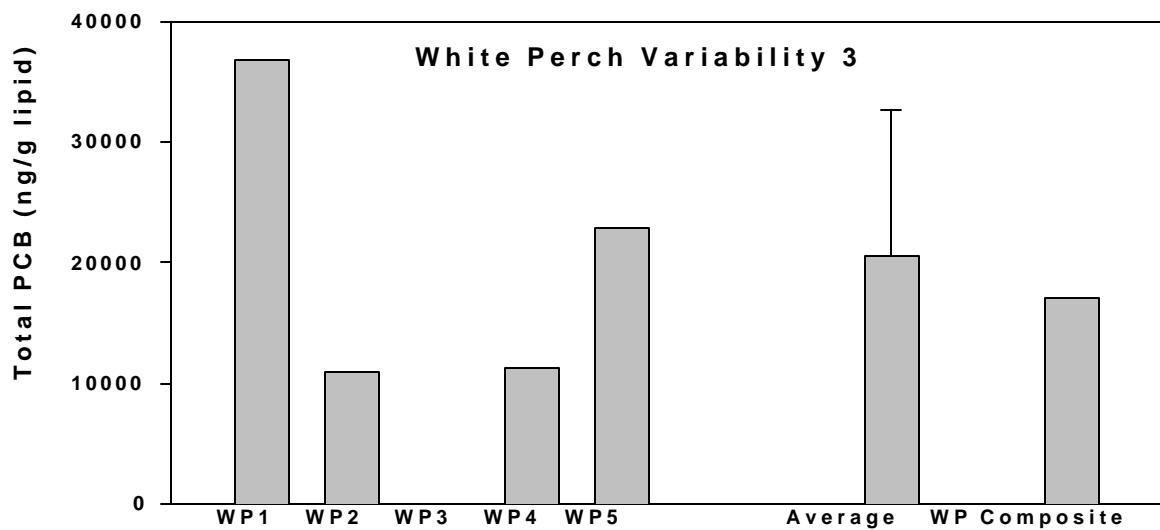
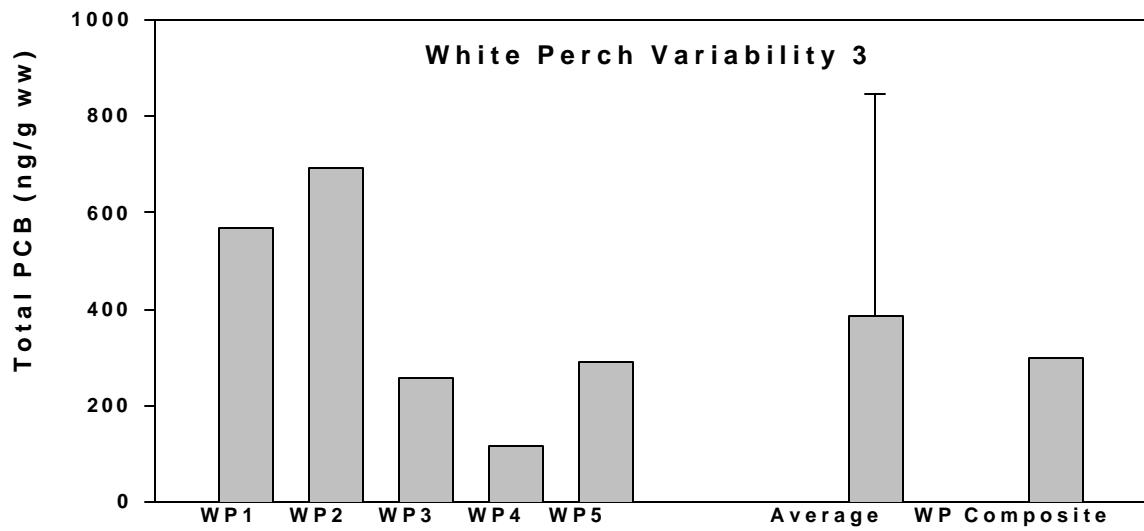


Figure 26. Individual fillet concentrations (wet weight and lipid normalized) for catfish from region 3 in Zone 5 (fall) compared to the mathematical average (standard deviations shown by error bars) and the analyzed fillet composite.

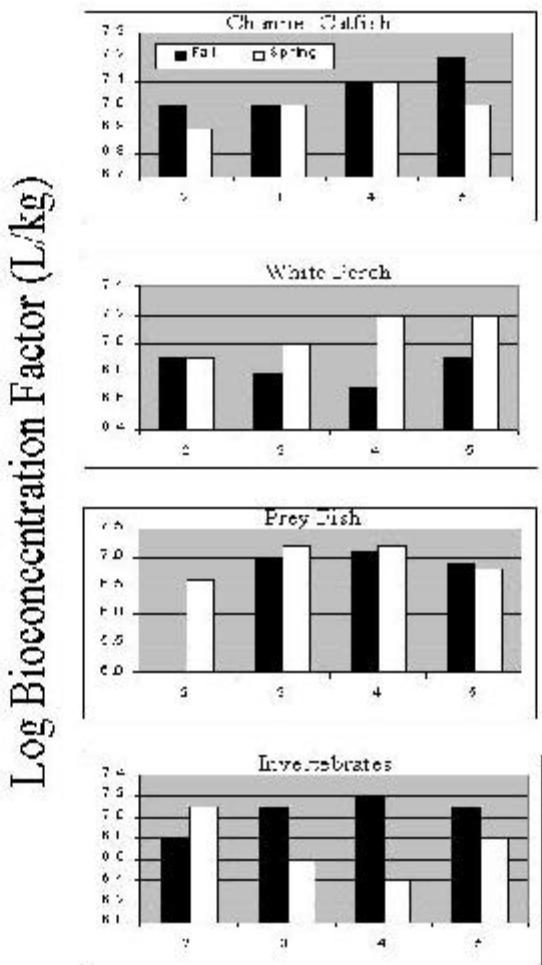


Figure 27. Total congeneric bioconcentration factors (BCFs).

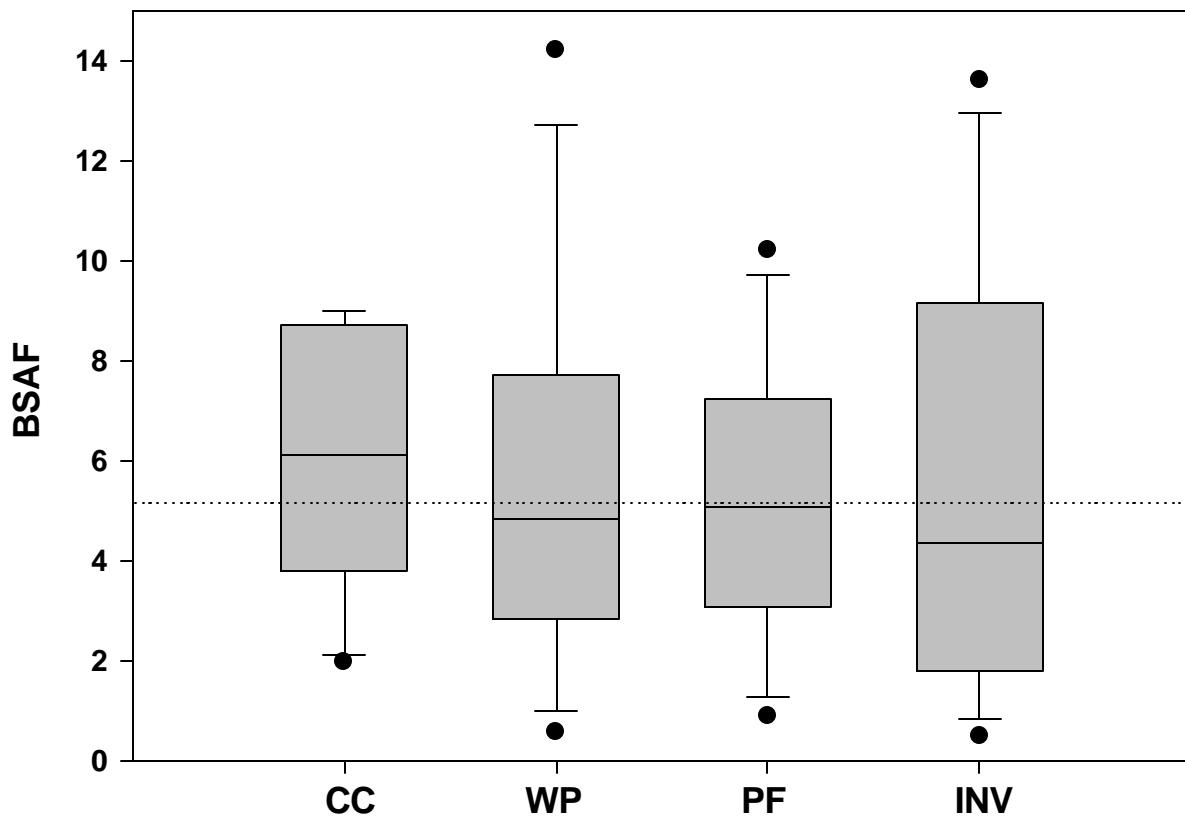


Figure 28. Total biota-sediment accumulation factors (BSAF) for channel catfish (CC), white perch (WP), prey fish (PF) and invertebrates (INV) collected from the Delaware River estuary in Fall 2001 and Spring 2002. The dotted line indicates the mean of species-specific median BSAF values.

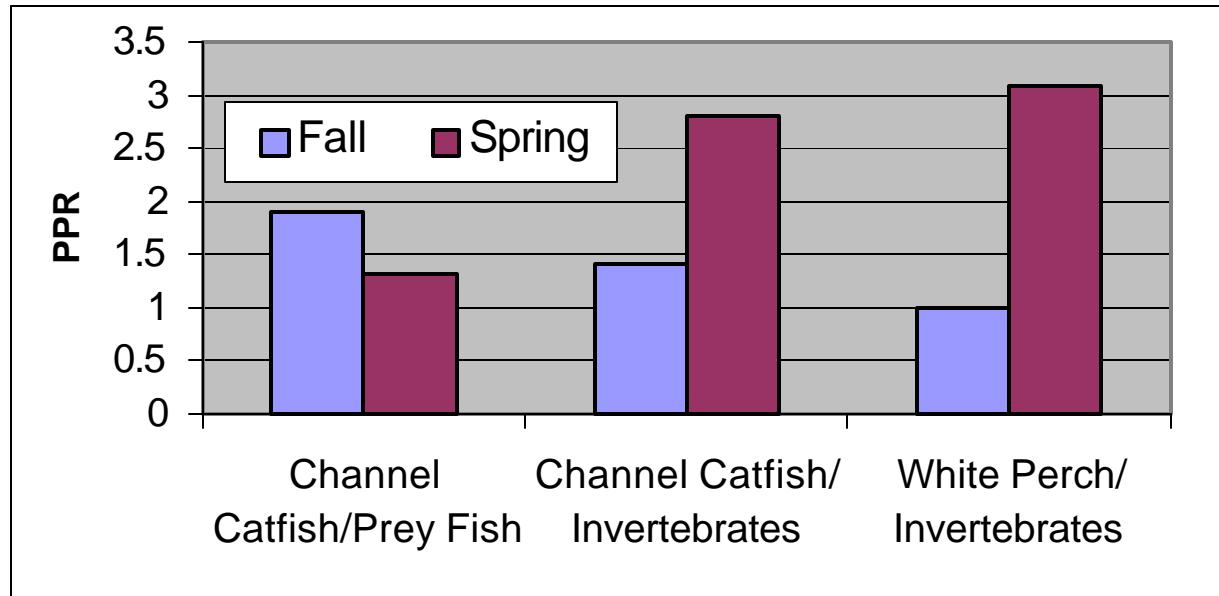


Figure 29. Predator/Prey Ratios of lipid normalized total PCBs from biota collected in the Delaware River estuary in Fall 2001 and Spring 2002.

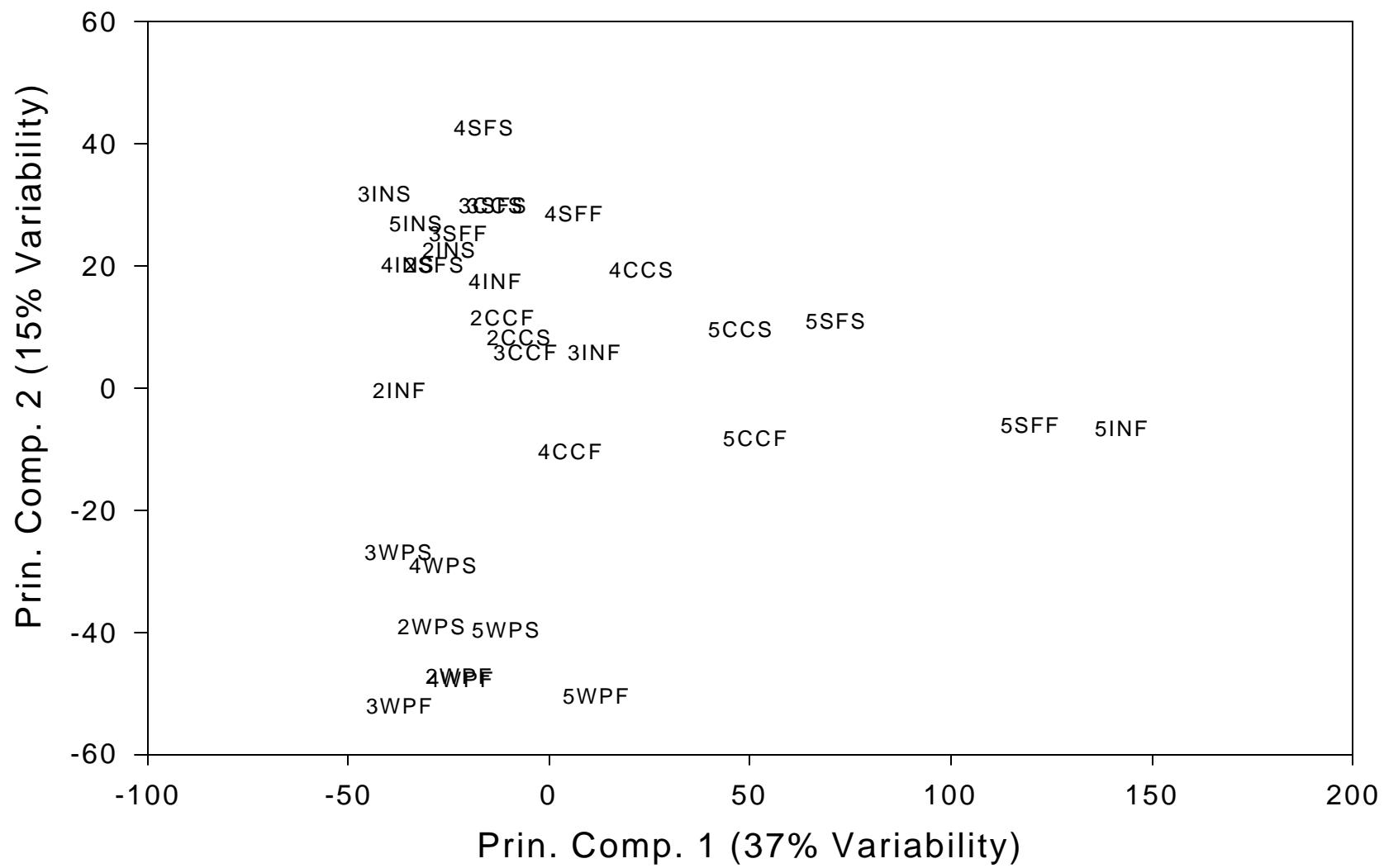


Figure 30. Principal component cross-plot for whole fish and prey items treating fall and spring separately.

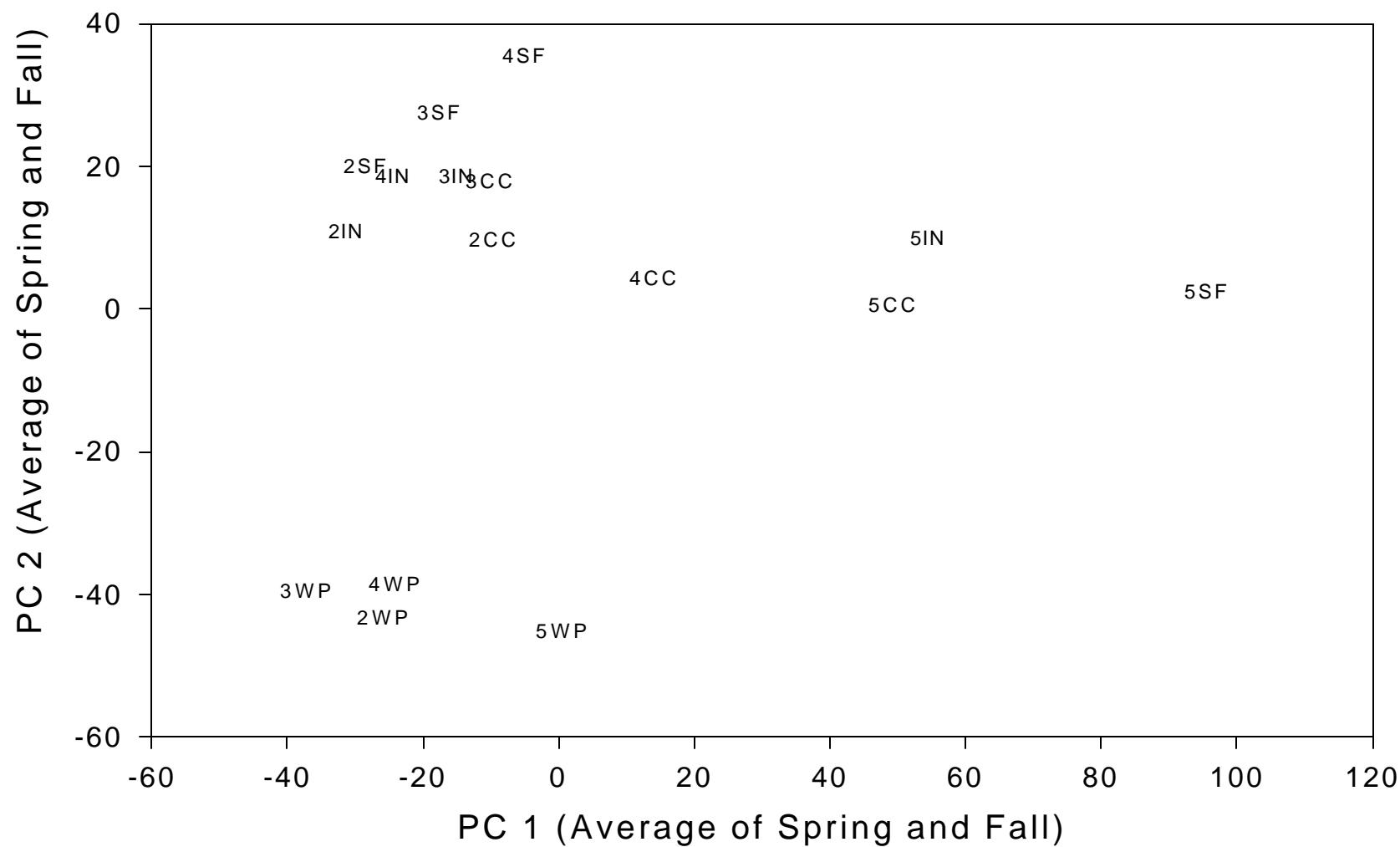


Figure 31. Reduced principal component cross-plot for whole fish and prey items treating generated by average values from both seasons.

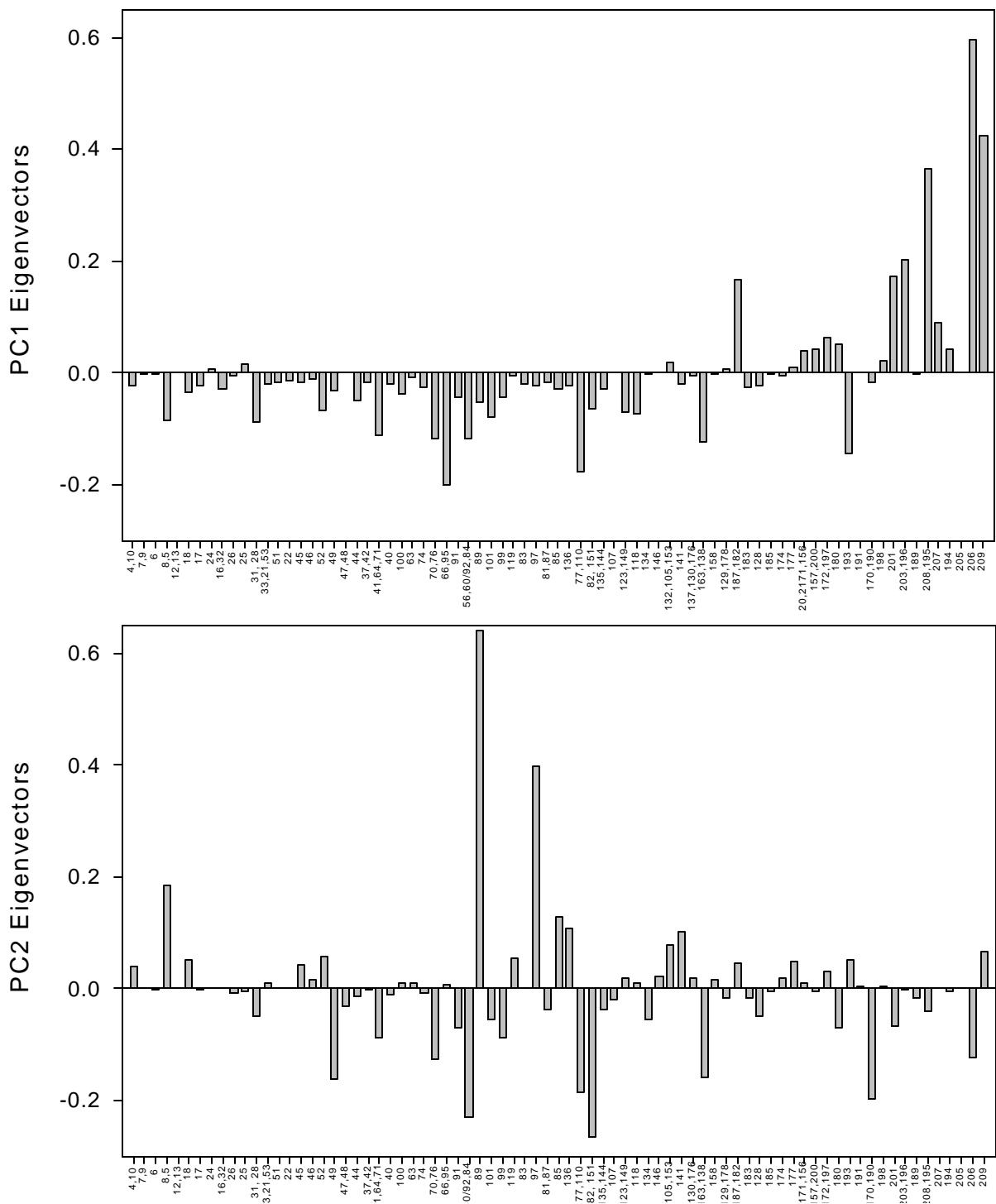


Figure 32. Principal component eigenvectors (weightings) for principal component 1 (PC1) and 2 (PC2).

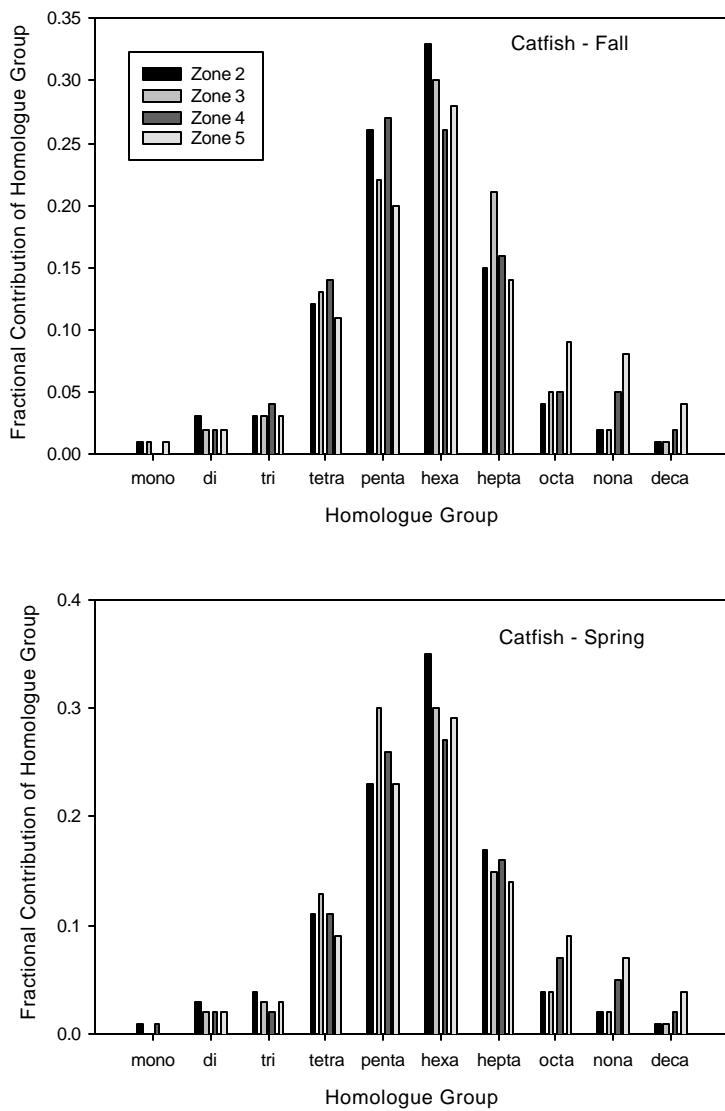


Figure 33. Zonal differences in the fractional (normalized to total wet weight concentrations) contribution from each homologue group for fall and spring collected channel catfish.

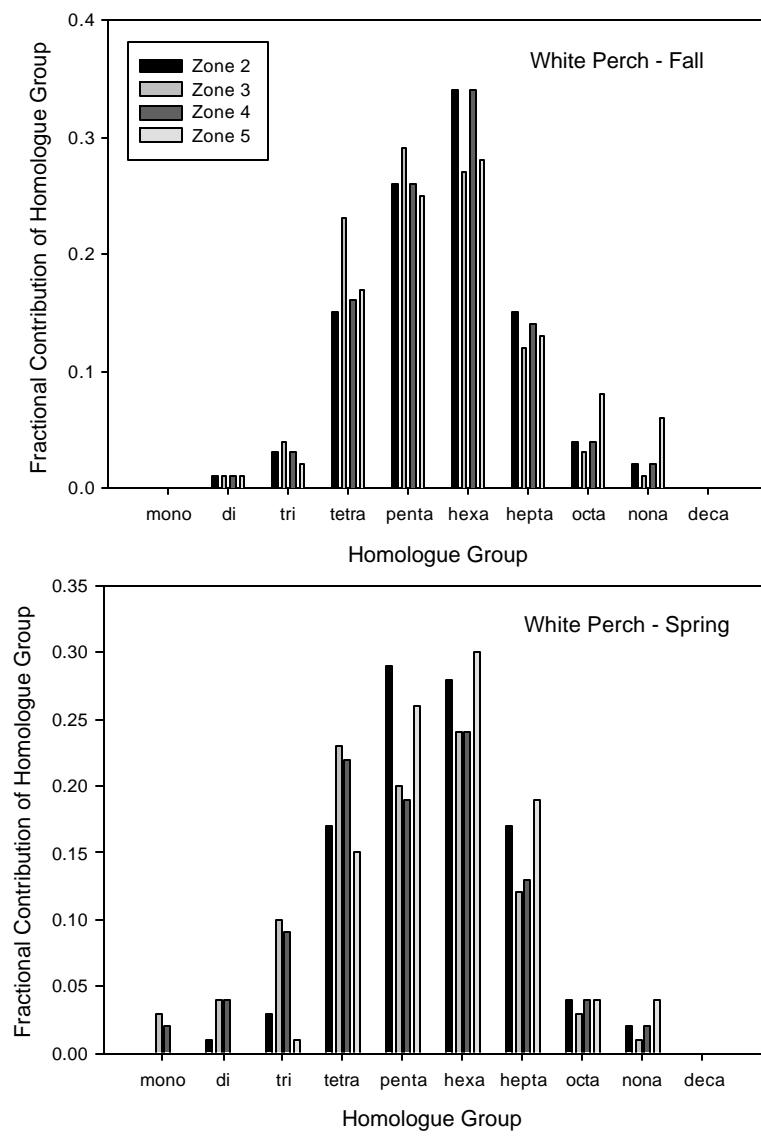


Figure 34. Zonal differences in the fractional (normalized to total wet weight concentrations) contribution from each homologue group for fall and spring collected white perch.

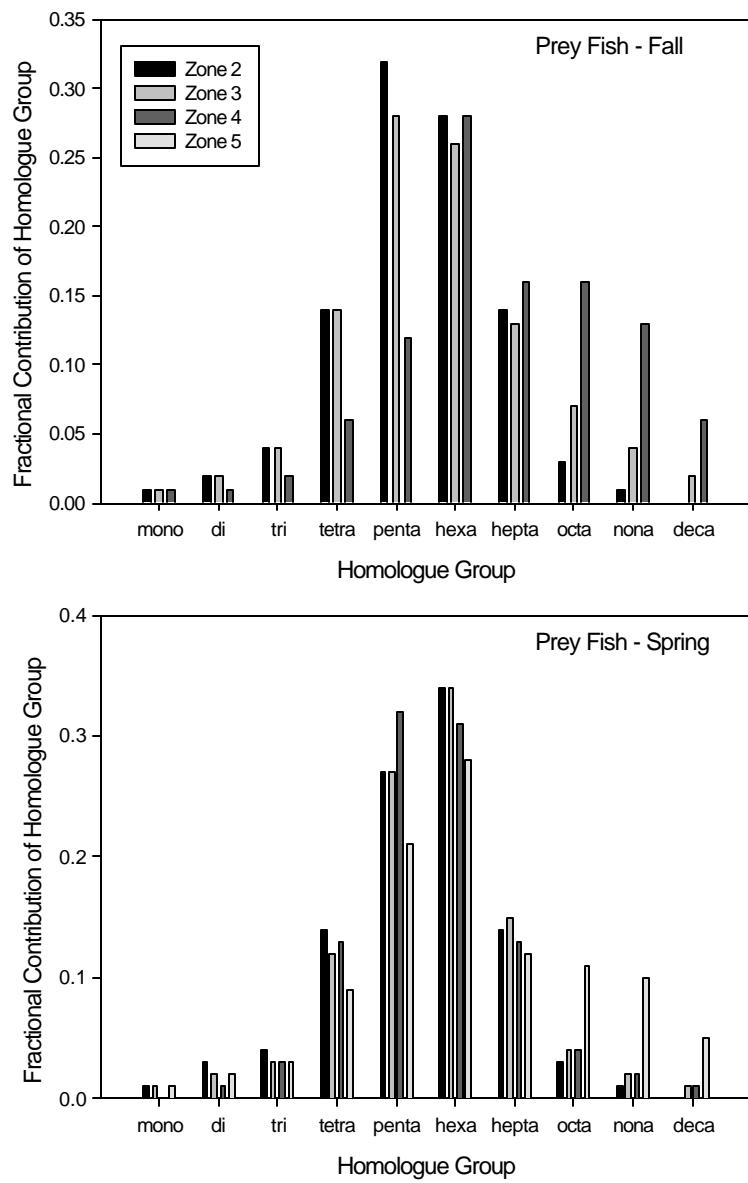


Figure 35. Zonal differences in the fractional (normalized to total wet weight concentrations) contribution from each homologue group for fall and spring collected invertebrates.

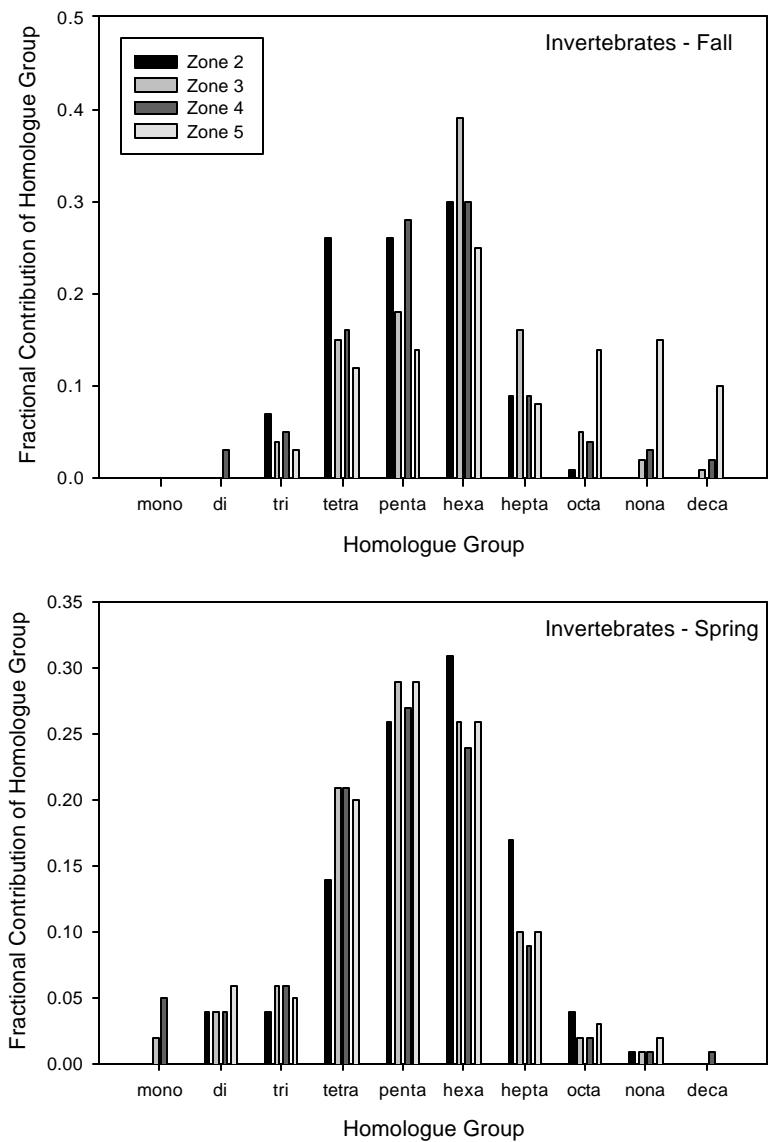


Figure 36. Zonal differences in the fractional (normalized to total wet weight concentrations) contribution from each homologue group for fall and spring collected small prey fish.

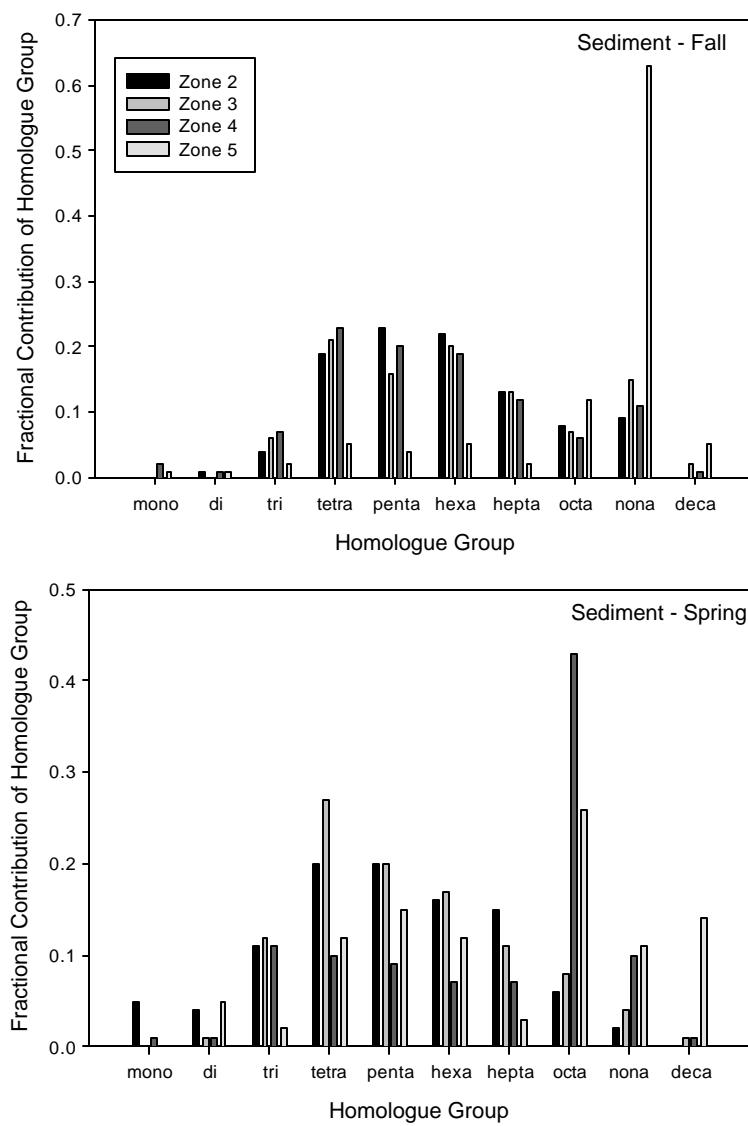


Figure 37. Zonal differences in the fractional (normalized to total wet weight concentrations) contribution from each homologue group for fall and spring collected sediment.

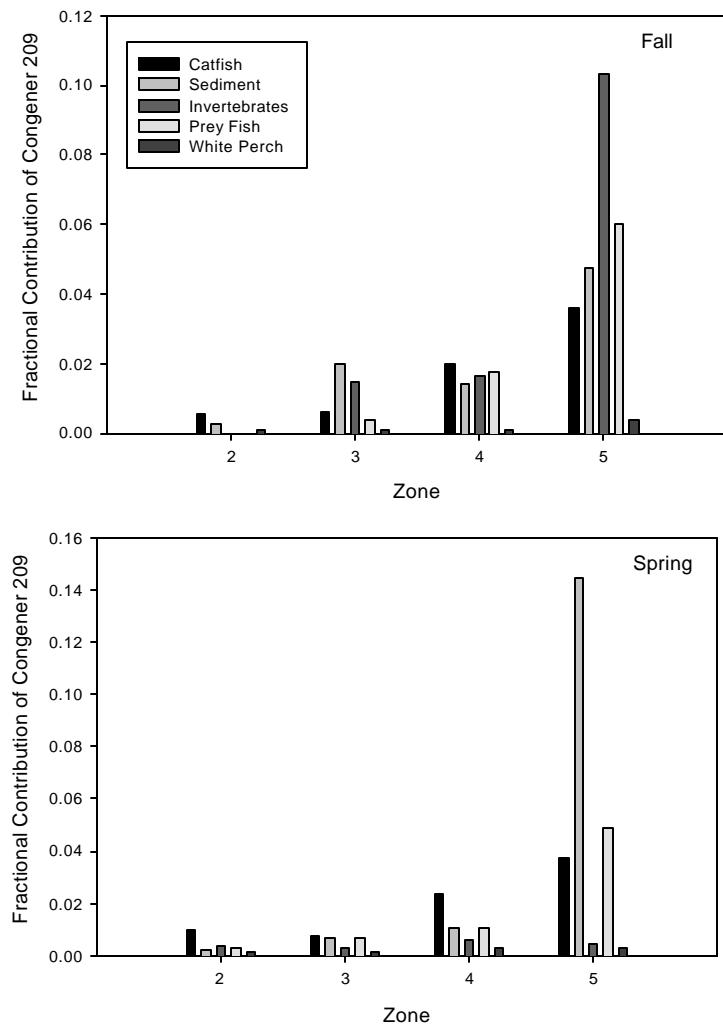
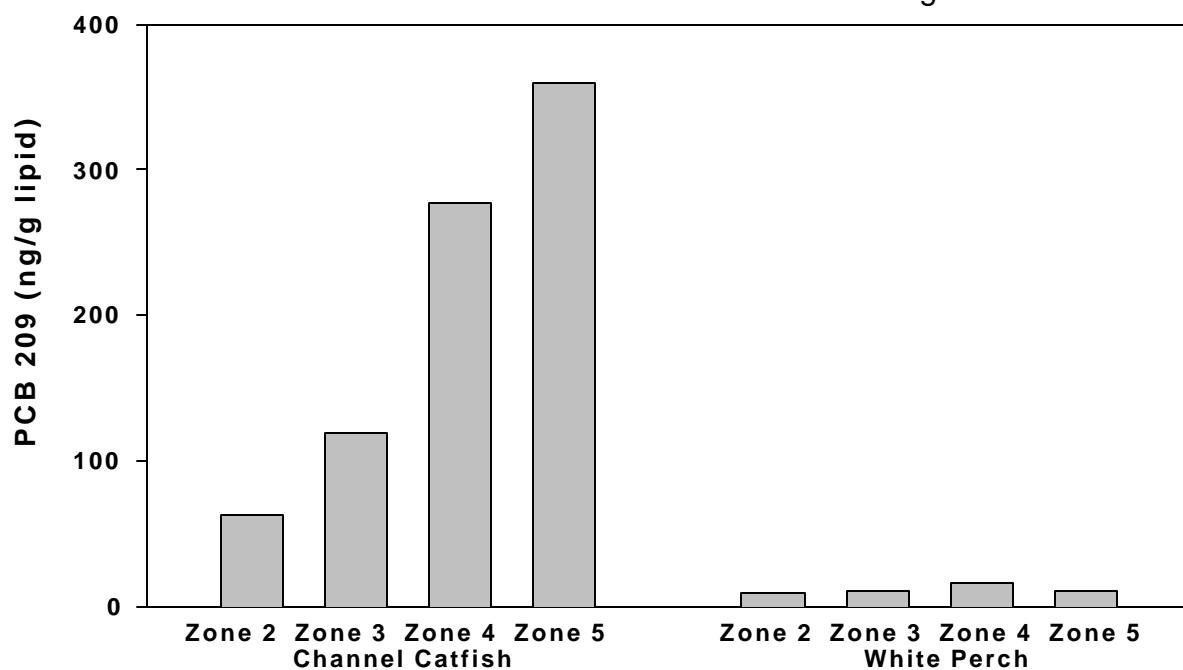


Figure 38. Zonal differences in fractional contribution of PCB congener 209 for fall and spring collected biota.

Comparision of Fall
Channel Catfish and White Perch Congener 209



Comparision of Spring
Channel Catfish and White Perch Congener 209

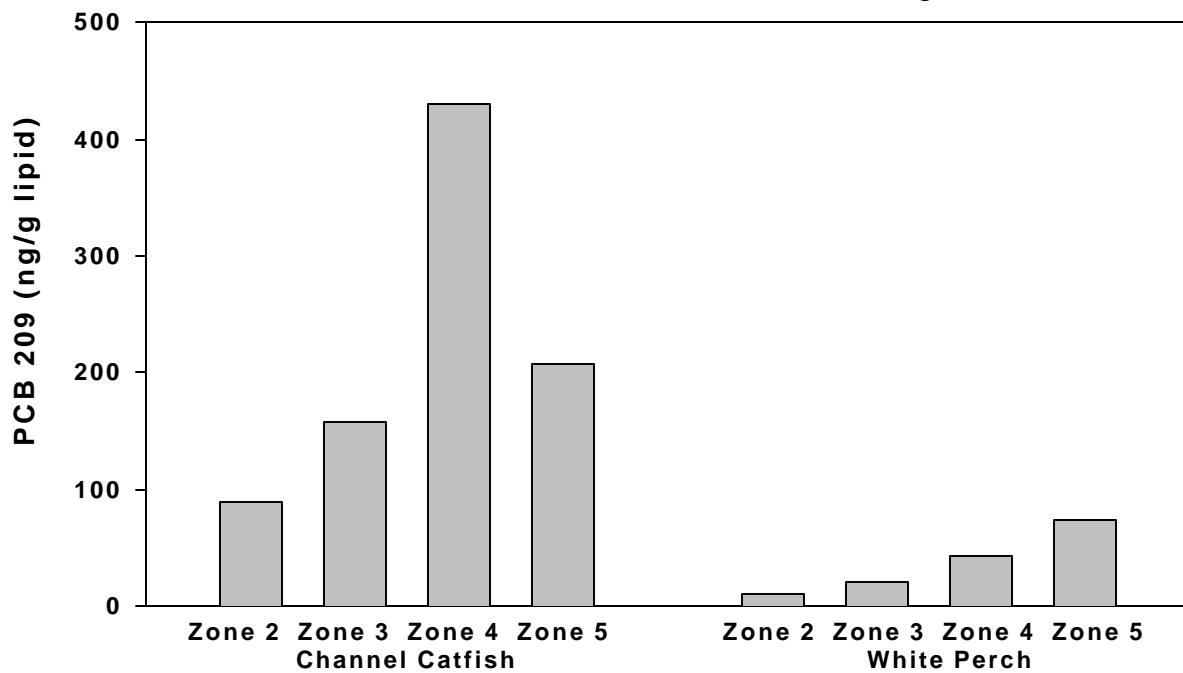


Figure 39. Zonal differences in PCB congener 209 lipid-normalized concentrations for fall and spring collected channel catfish and white perch.

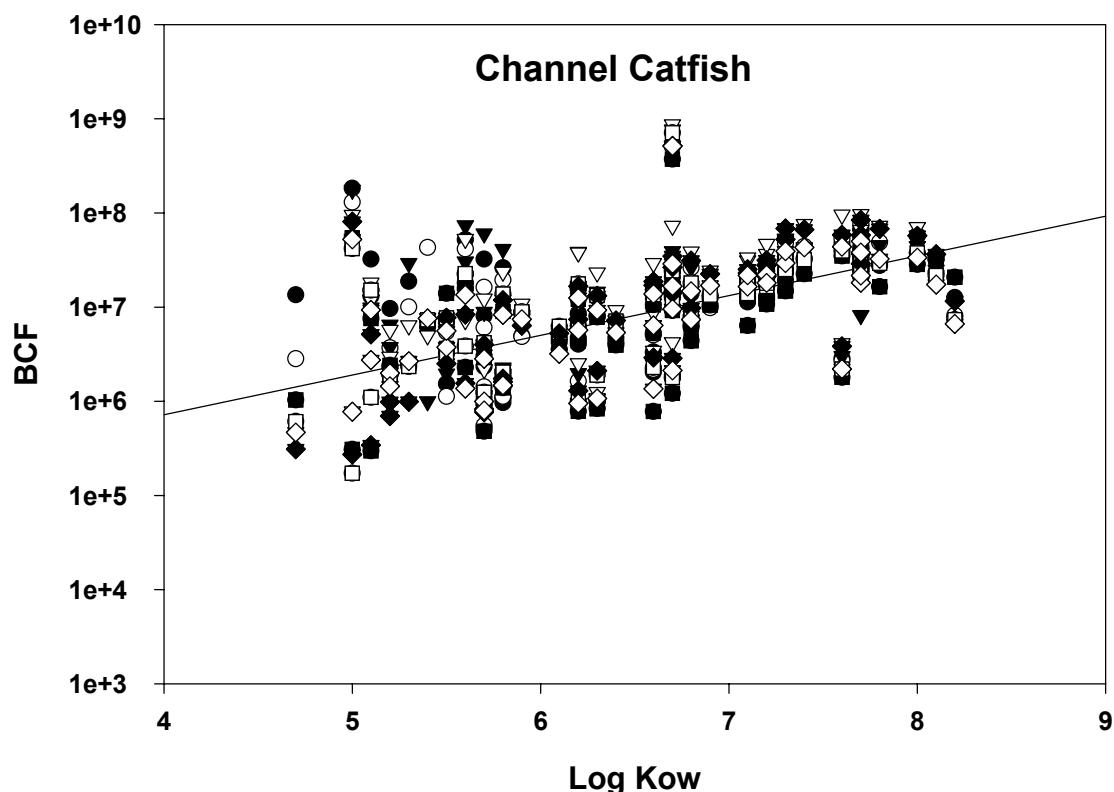


Figure 40. Bioconcentration factors (BCF) vs. log K_{ow} for individual PCB congeners in channel catfish collected from the Delaware River estuary, USA in Fall 2001 and Spring 2002. Regression analysis of BCF values vs. log K_{ow} values gave a linear regression of $\log \text{BCF} = 0.34 * \log \text{K}_{\text{ow}} + 4.81$ ($R = 0.49$, $P < 0.0001$).

●=Zone 2, ○=Zone 3, □=Zone 4, ▽=Zone 5.

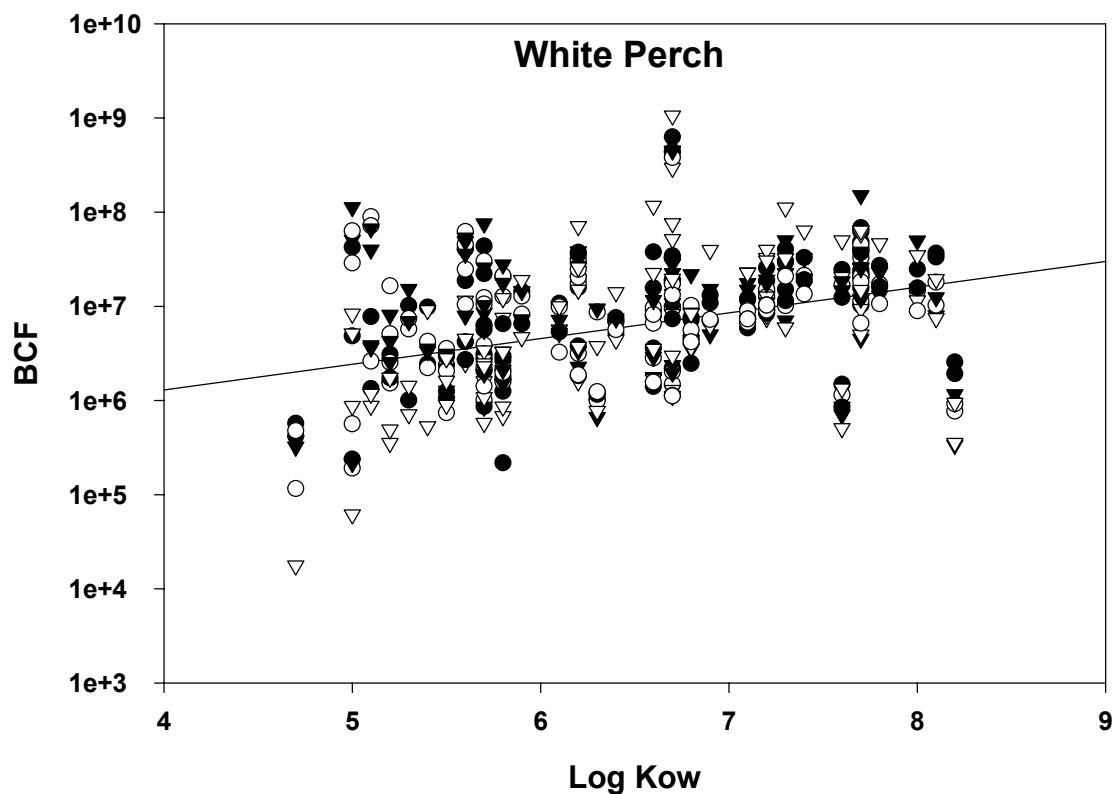


Figure 41. Bioconcentration factors (BCF) vs. log K_{ow} for individual PCB congeners in white perch collected from the Delaware River estuary, USA in Fall 2001 and Spring 2002. Regression analysis of BCF values vs. log K_{ow} values gave a linear regression of log BCF = 0.25*log K_{ow} + 5.24 ($R = 0.35$, $P < 0.0001$).
 •=Zone 2, O=Zone 3, □=Zone 4, ▽=Zone 5.

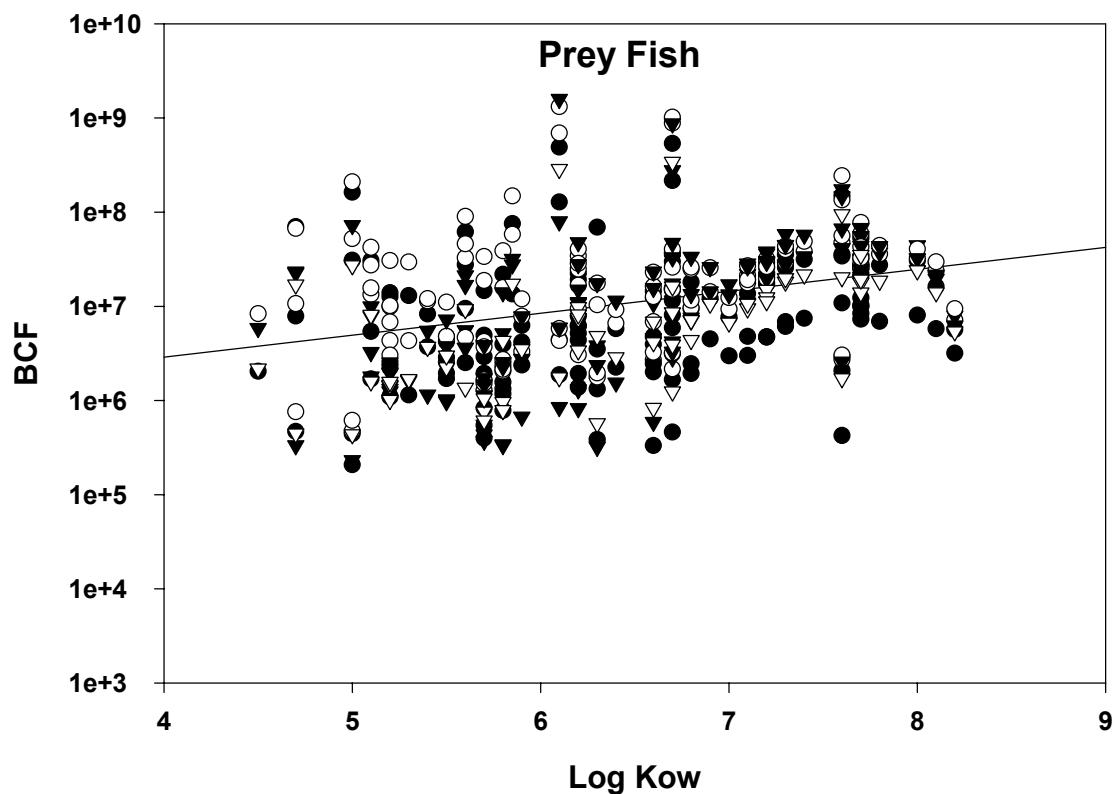


Figure 42. Bioconcentration factors (BCF) vs. log K_{ow} for individual PCB congeners in prey fish collected from the Delaware River estuary, USA in Fall 2001 and Spring 2002. Regression analysis of BCF values vs. log K_{ow} values gave a PCB linear regression of log BCF = 0.31*log K_{ow} + 4.88 ($R = 0.44$, $P < 0.0001$). •=Zone 2, O=Zone 3, □=Zone 4, ▽=Zone 5.

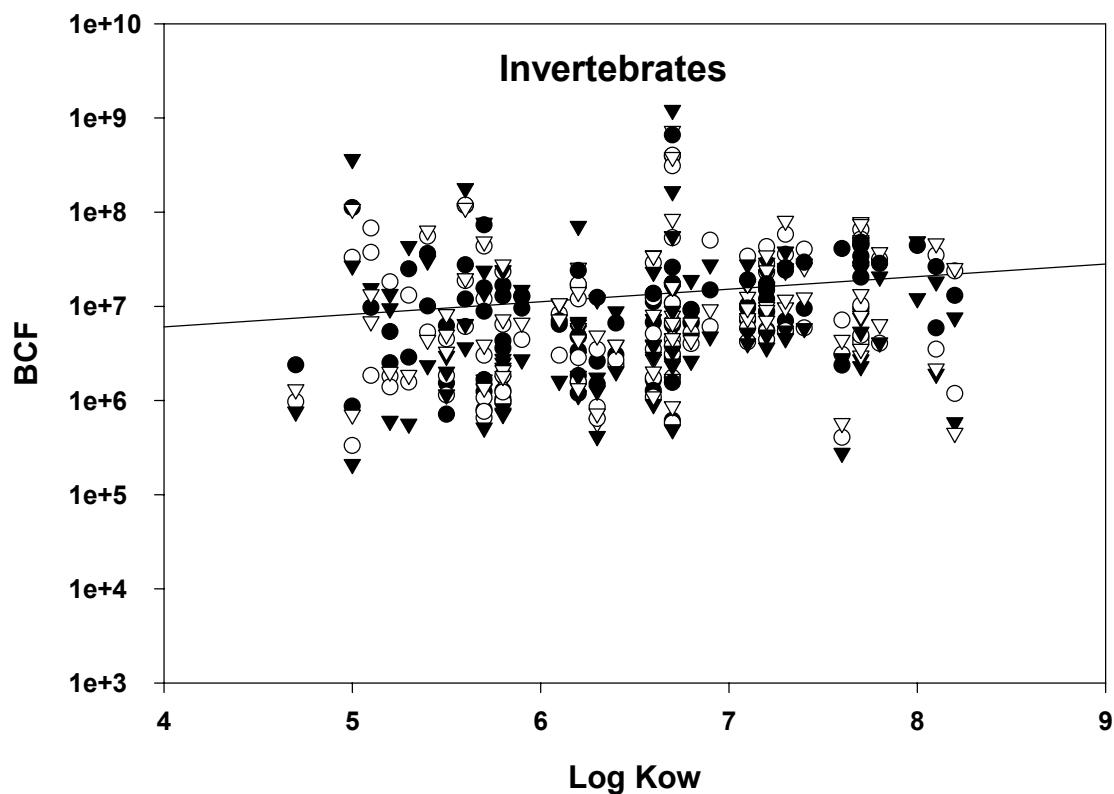


Figure 43. Bioconcentration factors (BCF) vs. log K_{ow} for individual PCB congeners in invertebrates collected from the Delaware River estuary, USA in Fall 2001 and Spring 2002. Regression analysis of BCF values vs. log K_{ow} values a PCB linear regression of log BCF = 0.14*log K_{ow} + 5.92 ($R = 0.20$, $P=0.0001$).
 •=Zone 2, O=Zone 3, □=Zone 4, ▽=Zone 5.

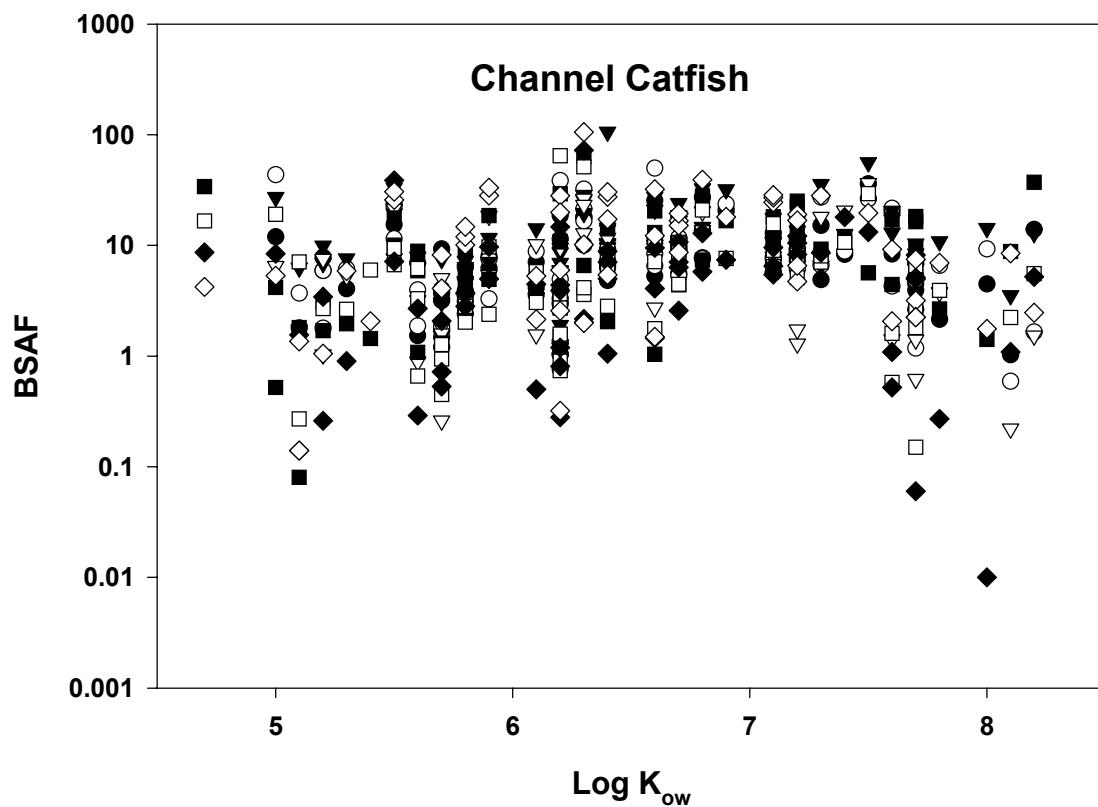


Figure 44. Biota-sediment accumulation factors (BSAFs) vs. $\log K_{ow}$ for individual PCB congeners in channel catfish collected from the Delaware River estuary, USA in Fall 2001 and Spring 2002. PCB linear regression: $BSAF = 1.06 * \log K_{ow} + 3.23$ ($R = 0.08$, $P=0.08$); PCB quadratic regression: $BSAF = -2.83 * \log K_{ow}^2 + 37.98 * \log K_{ow} - 115.22$ ($R = 0.20$, $P<0.0001$). •=Fall Zone 2, O= Fall Zone 3, □= Fall Zone 4, ▽= Fall Zone 5, □=Spring Zone 2, □=Spring Zone 3, ♦=Spring Zone 4, □=Spring Zone 5.

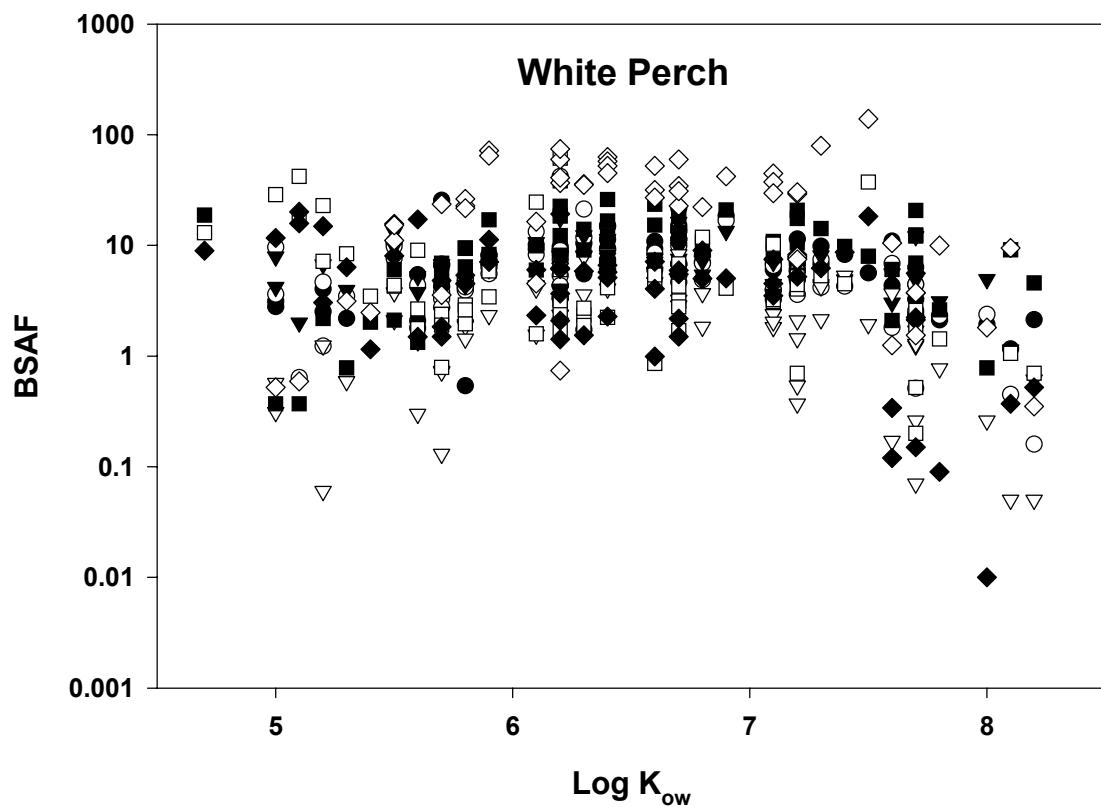


Figure 45. Biota-sediment accumulation factors (BSAFs) vs. $\log K_{ow}$ for individual PCB congeners in white perch collected from the Delaware River estuary, USA in Fall 2001 and Spring 2002. PCB linear regression: $BSAF = -0.33 * \log K_{ow} + 10.75$ ($R = 0.02$, $P = 0.62$); PCB quadratic regression: $BSAF = -3.35 * \log K_{ow}^2 + 43.37 * \log K_{ow} - 129.43$ ($R = 0.20$, $P < 0.0001$). •=Fall Zone 2, O= Fall Zone 3, □= Fall Zone 4, ▽= Fall Zone 5, □=Spring Zone 2, □=Spring Zone 3, ♦=Spring Zone 4, □=Spring Zone 5.

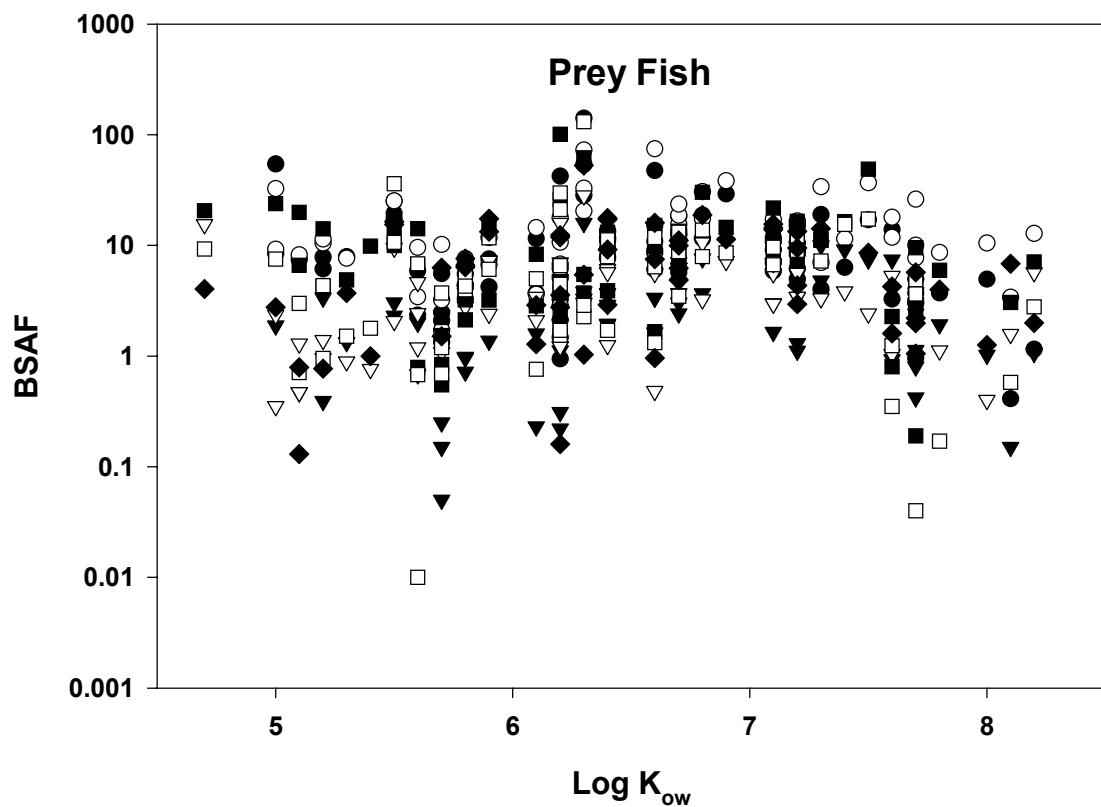


Figure 46. Biota-sediment accumulation factors (BSAFs) vs. $\log K_{ow}$ for individual PCB congeners in prey fish collected from the Delaware River estuary, USA in Fall 2001 and Spring 2002. PCB linear regression: $BSAF = -0.17 * \log K_{ow} + 10.2$ ($R = 0.01$, $P = 0.83$); PCB quadratic regression: $BSAF = -2.94 * \log K_{ow}^2 + 38.20 * \log K_{ow} - 112.82$ ($R = 0.16$, $P = 0.0021$). ●=Fall Zone 2, ○=Fall Zone 3, □=Fall Zone 4, ▽=Fall Zone 5, ▨=Spring Zone 2, ▨=Spring Zone 3, ♦=Spring Zone 4, ▨=Spring Zone 5.

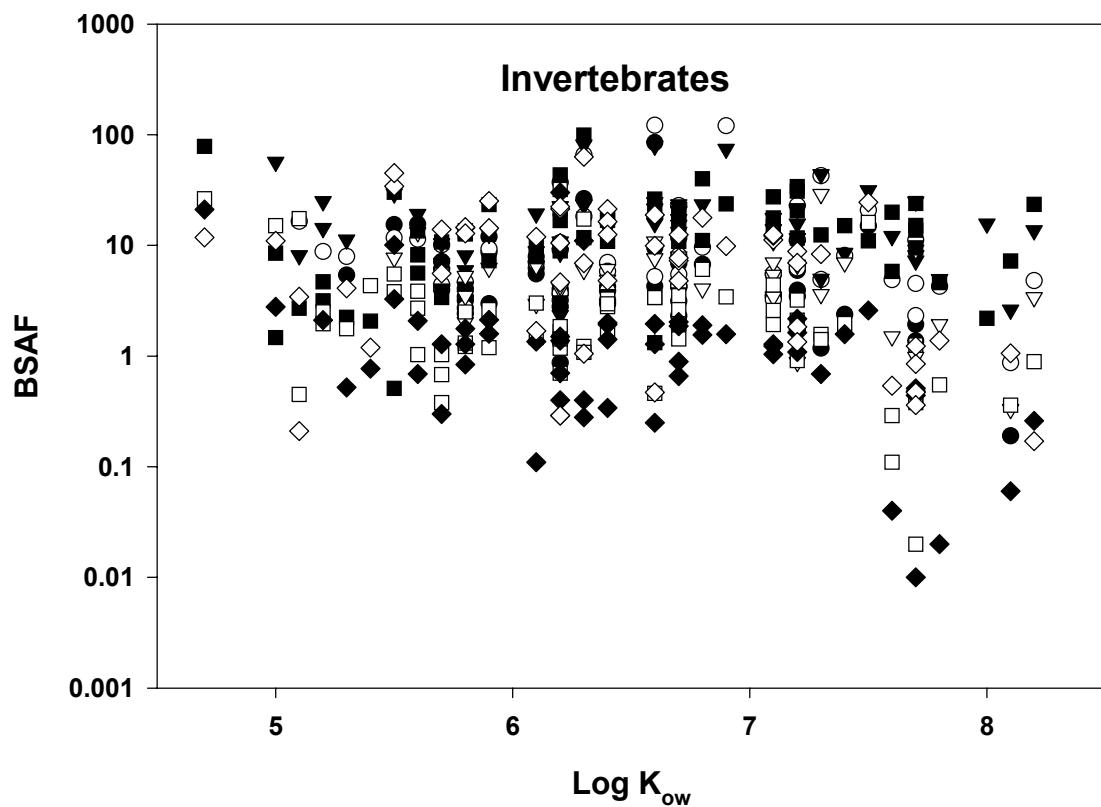


Figure 47. Biota-sediment accumulation factors (BSAFs) vs. $\log K_{ow}$ for individual PCB congeners in invertebrates collected from the Delaware River estuary, USA in Fall 2001 and Spring 2002. PCB linear regression: $\log \text{BSAF} = -0.51 * \log K_{ow} + 12.01$ ($R = 0.03$, $P=0.49$); PCB quadratic regression: $\log \text{BSAF} = -2.36 * \log K_{ow}^2 + 30.32 * \log K_{ow} - 86.94$ ($R = 0.13$, $P=0.013$). •=Fall Zone 2, O= Fall Zone 3, □= Fall Zone 4, ▽= Fall Zone 5, □=Spring Zone 2, □=Spring Zone 3, ♦=Spring Zone 4, □=Spring Zone 5.

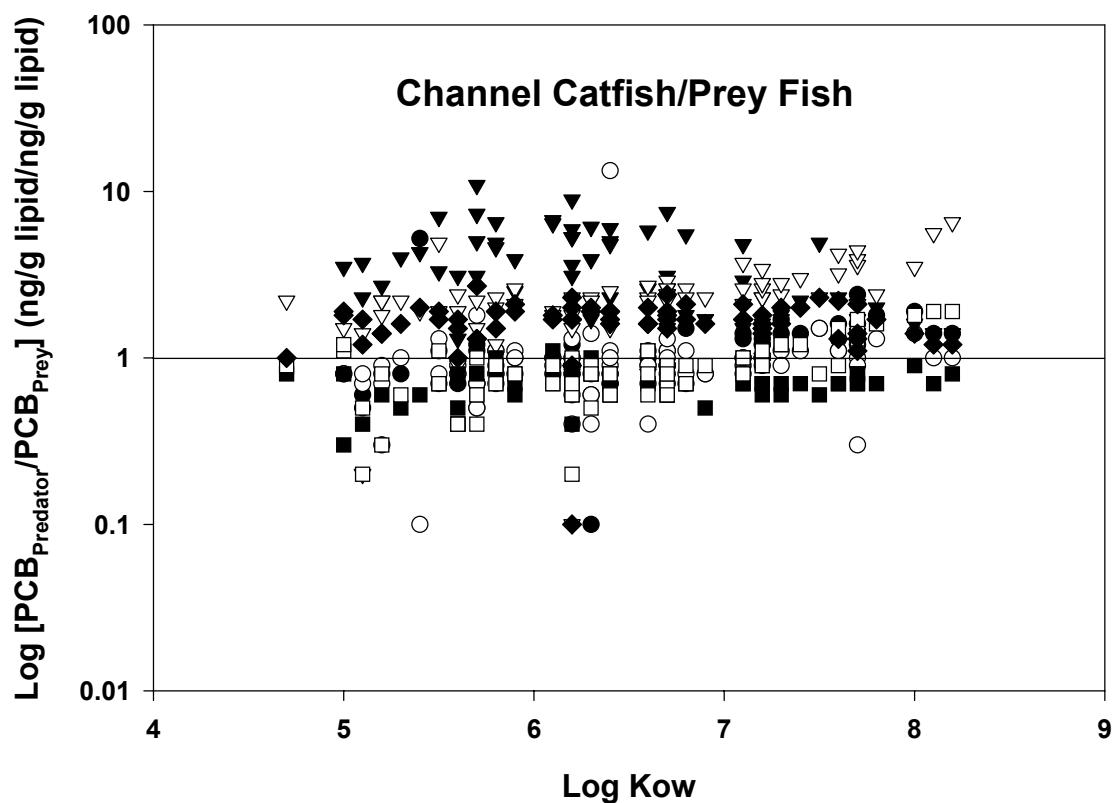


Figure 48. Lipid normalized predator/prey ratios vs. log K_{ow} for individual PCB congeners for channel catfish/prey fish collected from the Delaware River estuary, USA in Fall 2001 and Spring 2002. The line represents a 1:1 ratio, indicating no bioaccumulation of PCBs from prey to predator. ●=Fall Zone 3, ○= Fall Zone 4, □= Fall Zone 5, ▽= Spring Zone 2, □=Spring Zone 3, □=Spring Zone 4, ◆=Spring Zone 5.

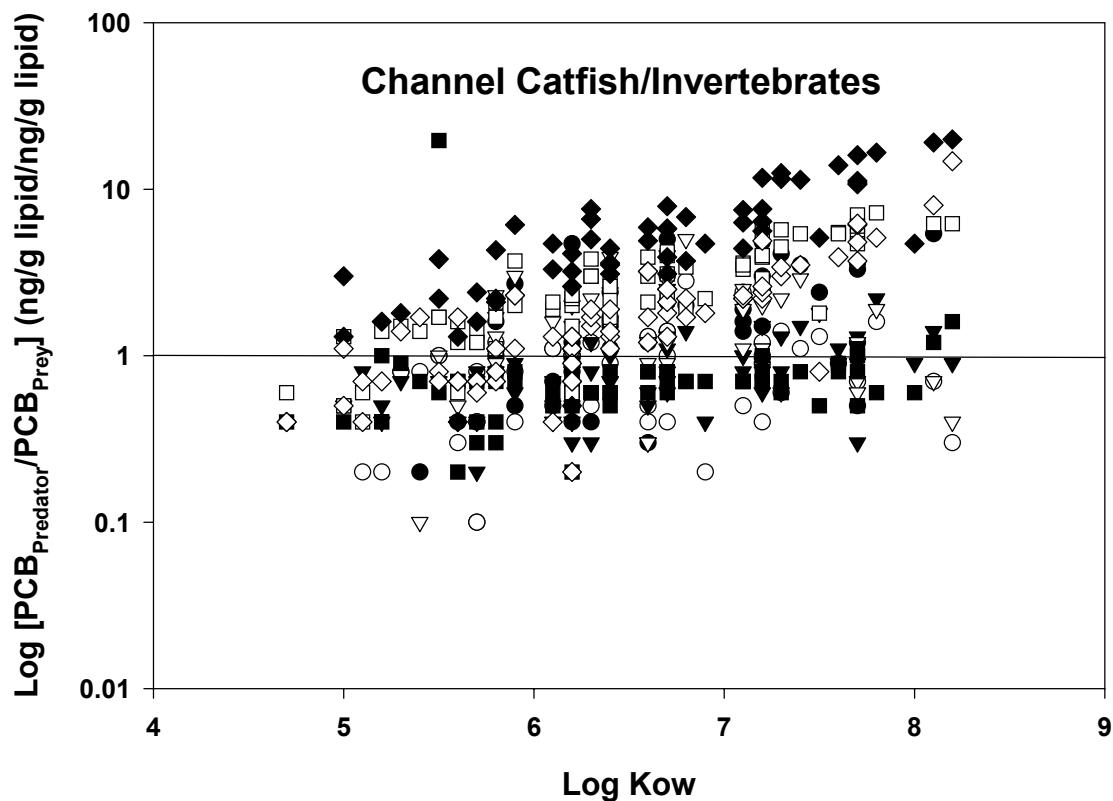


Figure 49. Lipid normalized predator/prey ratios vs. log K_{ow} for individual PCB congeners for channel catfish/invertebrates collected from the Delaware River estuary, USA in Fall 2001 and Spring 2002. The line represents a 1:1 ratio, indicating no bioaccumulation of PCBs from prey to predator. ●=Fall Zone 2, ○=Fall Zone 3, □=Fall Zone 4, ▽=Fall Zone 5, □=Spring Zone 2, □=Spring Zone 3, ♦=Spring Zone 4, □=Spring Zone 5.

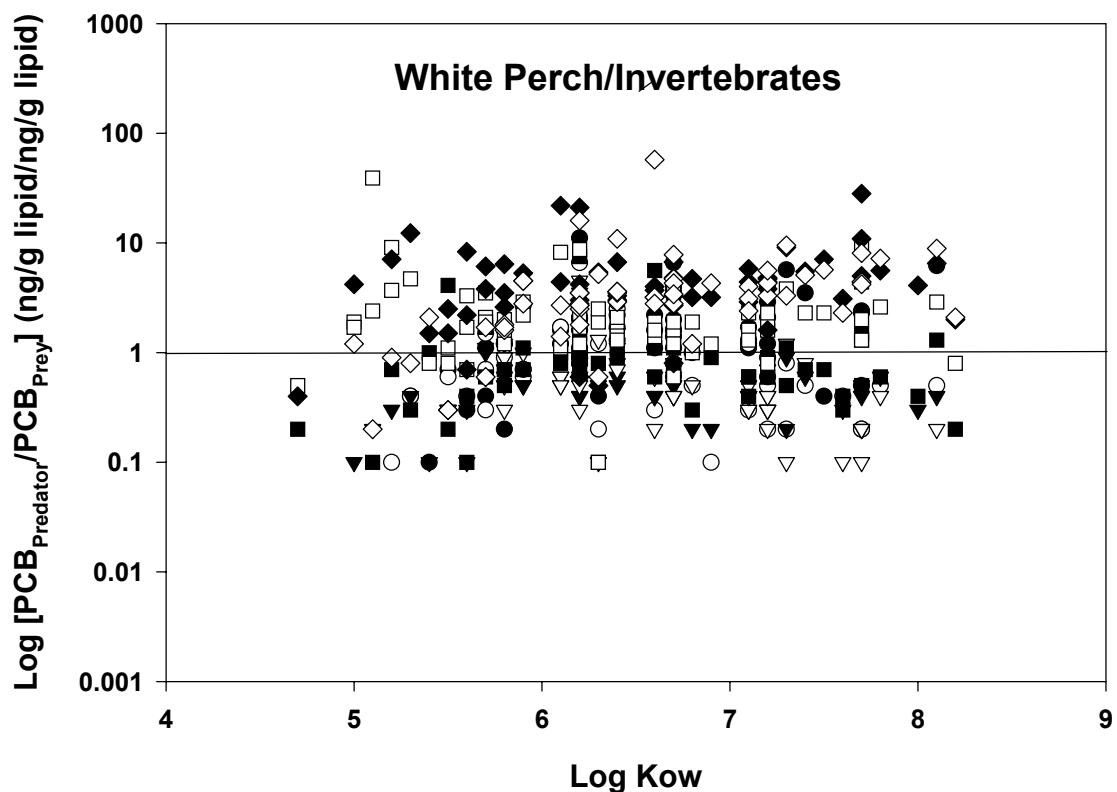


Figure 50. Lipid normalized predator/prey ratios vs. log K_{ow} for individual PCB congeners for white perch/invertebrates collected from the Delaware River estuary, USA in Fall 2001 and Spring 2002. The line represents a 1:1 ratio, indicating no bioaccumulation of PCBs from prey to predator. ●=Fall Zone 2, ○=Fall Zone 3, □=Fall Zone 4, ▽=Fall Zone 5, □=Spring Zone 2, □=Spring Zone 3, ♦=Spring Zone 4, □=Spring Zone 5.